

GRADE THREE READERS' INFERENCE STRATEGIES:  
THE IDENTIFICATION OF AND RELATIONSHIP  
TO READING ABILITY

CENTRE FOR NEWFOUNDLAND STUDIES

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SHEILA ANN YETMAN, B.A.(Ed.), B.A.









GRADE THREE READERS' INFERENCE STRATEGIES: THE  
IDENTIFICATION OF AND RELATIONSHIP TO  
READING ABILITY

by

Sheila Ann Yetman, B.A.(Ed.), B.A.

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Dedicated to my mother and  
in memory of my father

## Abstract

Reading comprehension consists of a number of cognitive processes that are used to construct meaning. The research reported herein investigated the inferring process which is considered to be essential to the comprehension of text. The purpose of the study was to identify the inference strategies of grade three readers and to determine whether or not there was a relationship between reading ability and strategy use.

Thirty grade three readers from two heterogeneous classes comprised the sample. Using a combined methodology of independent verbal reports and questions where necessary, the readers were asked to verbalize what they were thinking as they read a narrative text. The questions were used to supplement the reports in cases where insufficient or unclear information was given by the readers. The verbal reports were analyzed to determine how the readers made their interpretations of the story. Reading ability was determined by the percentiles achieved on the Vocabulary and Comprehension subtests of the Canadian Tests of Basic Skills (King-Shaw, 1989).

The data were analyzed qualitatively and quantitatively. Qualitative results showed that the grade three readers used nine inference strategies in their attempts to comprehend the narrative. Quantitative results showed a significant positive relationship between vocabulary and comprehension, a significant negative relationship between vocabulary,

comprehension, and strategy 5 (defaulting and transforming) and a number of significant positive relationships among the strategies themselves.

Conclusions of the study, implications for comprehension instruction and recommendations for further research are also discussed.

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## CHAPTER 1

### INTRODUCTION

Reading comprehension is made up of a set of complex, cognitive processes. It is a constructive process involving processes such as predicting, inferring, analyzing, synthesizing, monitoring, and generalizing. Each requires the reader in one way or another to think, reason, choose, and elaborate in order to determine what finally becomes a meaningful representation of the text.

Given the composite complexity of the processes, this study will examine only the process of inferring as an attempt to understand further what young children do to comprehend text. This examination will contribute to a more thorough understanding of reading comprehension by identifying what young children are capable of doing with text.

This chapter is organized around the following headings: background of the study, purpose of the study, definition of terms, and significance of the study.

#### Background of the Study

The belief that making inferences is an integral part of the comprehension process has permeated reading research for over three-quarters of this century. If such a belief is the case, then inferring must be something that we expect young children to be able to do, yet the evidence is inconsistent. The consensus seems to be that young children make many inferences about the world around them by connecting, comparing and evaluating new events and experiences with old

and familiar ones. Such behavior seems to be spontaneous; however, that spontaneity is not as evident when children read. Children do not make inferences as spontaneously during reading as they do when involved in other activities. Some research studies show that young readers can in fact make inferences (Allen, 1985; Danner & Mathews, 1980) and possess the basic competence to make inferences (Johnson & Smith, 1981). Other studies indicate that although the making of inferences is limited by the quality and quantity of text clues and prior knowledge (Mazor & Yussen, 1983), young readers can make inferences when the material they are reading is at their instructional level (Malicky & Schienbein, 1981).

Although the study of inference-making and young children is a recent phenomenon, research has shown that young children are capable of making inferences about their surroundings (Hansen, 1981a). Prior to entering school "...most of their learning is the result of inferences that they have had to make about the world" (McIntosh, 1985, p. 756). Even though children draw inferences in their daily activities, seemingly spontaneously, they are not as consistent about making inferences when they are confronted with reading tasks (Hansen & Hubbard, 1984).

Despite the aforementioned inconsistencies it seems that the use of various strategies facilitates young children's inferential comprehension: using inference training strategies (Dewitz, Carr & Patberg, 1987; Hansen, 1981 a & b), using

instructional strategies (Carr, Dewitz & Patberg, 1989; Poindexter & Prescott, 1986); and modeling awareness of the inferring process (Gordon, 1985). Thus, there appears to be strong evidence that if comprehension instruction were more directed toward developing inferential skills, then young readers would come to expect that the meaning of text is implicit as well as explicit.

There are a variety of reasons for the suspected lack of inference-making among young readers: they are not asked to make inferences because the task is considered to be too difficult for them (McIntosh, 1985); teachers emphasize literal comprehension believing that inferential comprehension will develop with age (Hansen, 1981a); and children may be limited in their ability to make an inference in a particular situation because they often lack prior knowledge (Hansen, 1981b). Despite these reasons, it seems reasonable to accept that in order to successfully develop inferential skills, children must become active participants in the process of inference-making (Hollingsworth & Reutzel, 1988).

If young children make inferences in their everyday lives and, if they have the necessary background knowledge and are competent with the text, then do they have the strategies necessary to make inferences when they read? If they do not have such strategies, then it seems it would be useful for teachers to teach them how to infer. This raises the question

of what strategies teachers would teach? The present study was motivated by an interest in answering such questions.

#### Purpose of the Study

The purpose of the study is to examine the process of inferring in text comprehension and to identify the specific inference strategies used by grade three readers as they read text for immediate understanding. This study will address specifically the following questions:

1. What are the inference strategies used by grade three readers as they attempt to understand text?
2. What is the relationship between reading proficiency and use of the inference strategies?

#### Definition of Terms

The following terms are defined as they are used in this study:

- Inference:** an interpretation of text that is constructed from and consistent with the text information and background knowledge.
- Inference Strategy:** a plan or technique used by the reader to make an inference.
- Reading Ability:** determined by the percentiles achieved on the Vocabulary and Comprehension subtests of the Canadian Tests of Basic Skills (King-Shaw, 1989), Level 9, Form 7.

### Significance of the Study

The evidence on children's inferential ability is scanty; however, evidence that their reasoning is poor is growing. The 1987 National Assessment of Educational Progress (Applebee, Langer, & Mullis) on reading, writing and reasoning reports that only small percentages of children and young adults can reason effectively about what they are reading and writing and that most demonstrate only a surface understanding of materials for their age levels. As a result, they are ill-equipped to meet the demands of the workplace and a society that are increasingly becoming more technological and complex. As a means of addressing these concerns, educators and the general public have begun to encourage schools to focus on the development of effective reasoning skills. Perhaps a worthwhile place to start is to analyze what young readers are able to do with text.

The present study will contribute to our understanding of how young children process text information, thereby enhancing our understanding of how children may best be taught to make inferences while reading. This research has implications for how young children can be taught to read for meaning through teaching them those strategies that help them make inferences.

This study will attempt to show what very young readers do as they read to understand text. It will also discuss similarities and differences between the inference strategies of grade three readers and those of older readers. This



investigation should also increase our understanding of the inferential comprehension processing of young readers. The more we know about the whole comprehension process, then the more effective reading/language programs and teaching practices we can utilize in our classrooms. Thus, it may be possible to help less proficient readers improve their comprehension by teaching them those inference strategies used successfully by more proficient readers.

## CHAPTER 2

### REVIEW OF THE LITERATURE

While much is already known about reading comprehension, our knowledge of this process and its components is continually increasing. It is generally accepted that reading is a constructive, active process; that readers construct meaning using information in the text and their background knowledge. Making inferences is part of that meaning construction process.

The review of the literature and related research gives a brief history of the growing interest in research on inference. This review focuses on the role of inference in reading comprehension. To facilitate this focus, the review is organized around a number of areas deemed to be relevant to inferential comprehension generally and to that of very young readers specifically. The review is structured around the following headings: inferring in reading comprehension, how are inferences made, inferring and young children, defining inferring, inference strategy and reading ability, major studies on inference strategies, reading proficiency and inferences, and developmental inferential comprehension.

#### Inferring in Reading Comprehension

For over three-quarters of this century the belief that making inferences is an integral part of the comprehension process can be identified in reading research. In 1908, Huey claimed "...that to read is (not just) to say what is upon the

page, (but) to think, about the meaning that the page suggests," (p. 349). Thorndike, in 1917 suggested that the ability to understand the implied ideas of a paragraph could be labeled as reasoning. In fact, "Understanding a paragraph is like solving a problem in mathematics," (p. 213) wherein the readers must select, connect and organize relevant information while ever being mindful of the purposes for which they are reading. Davis' 1942 survey of the literature identified "the ability to draw inferences from a passage about its contents" (p. 236) as a group of skills basic to comprehension. Consequently, the concept of making inferences as a cognitive behavior in reading is not new but has indeed a basis that has been firmly established over the years.

Similar conclusions have been drawn recently by researchers. Inferences need to be constructed to make sense of a story (Carr, 1983); comprehending text is impossible without making inferences (McIntosh, 1985); inferences are an inevitable part of the comprehension process (Pearson & Johnson, 1978), and the process of good inference-making is the core of reading comprehension (Phillips, 1986). Because there is a great deal of inference-making necessary to understand even the simplest text (Pearson & Johnson, 1978), it would seem apparent then, that there can be no comprehension without making inferences.

Figure 1 illustrates Wilson's summary of many researchers' conceptions of reading comprehension as an interactive process. According to this figure readers take new

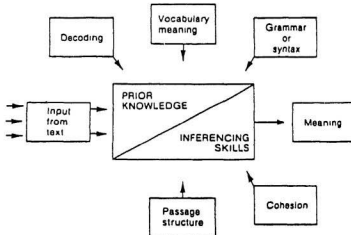


Figure 1. Researchers' Conception of Reading Comprehension  
(Wilson, 1983, p. 383)

information from the text, combine it with their knowledge of the lexical properties of language (i.e., decoding, vocabulary meaning and syntax), combine it with their knowledge of how stories go together (cohesion and structure) and with their knowledge of the topic to construct meaning. Wilson contends that the reader may use as much information as necessary from any number of these sources in no particular order of importance in order to understand the text. Thus, meaning is constructed when inferences are made through the integration of text information and background knowledge. This is the interactive nature of the reading process--integrating new

information from the text with the known information in the reader's head.

Wilson placed prior knowledge and inferencing skills at the centre of the figure clearly indicating that understanding cannot occur unless "the new is connected to the known". The reader's interpretation is dependent on information from many different sources; thus, "Lack of information on any part of the model can cause comprehension difficulties" (Wilson, 1983, p. 383). The degree and kind of comprehension difficulties may depend on where and to what extent the information was lacking. For example, young children do not necessarily need to decode every word in order to interpret a text. Because miscues that do not interfere with meaning are acceptable, such decoding miscues can occur without detracting from the readers' interpretation to any large extent. Similarly, while the readers' vocabulary knowledge may initially exclude a relevant concept for a particular context, textual cues may in fact extend the readers' knowledge to include a new semantic relationship with those they already have.

Comprehension is much more than knowing every word upon a page of text; in fact, comprehension cannot necessarily be assumed from word perfect reading (Smith, 1972). Comprehension is constructing meaning from print. Readers do this by interacting with print--hypothesizing, evaluating and interpreting what they read in terms of their own prior

knowledge and experience (Pearson & Johnson, 1978). Neither proficient word recognition nor prior knowledge and experience of a particular text can guarantee that comprehension will occur. In other words, it cannot be assumed that because readers read fluently and are familiar with the topic that they will inevitably understand the text. The readers' prior knowledge may be vague, distorted and/or fragmented and thus may impair comprehension (Lipson, 1984).

The findings of the Lipson studies (1982, 1983) concurred with Pearson, Hansen and Gordon (1979) that a well-developed schemata (relevant background knowledge) facilitates all comprehension but particularly inferential comprehension, while a poorly-developed schemata hinders understanding. Additionally, the Lipson studies indicated that young readers will rely more heavily on their background knowledge even when it does not agree with the text information. In fact, they were more likely to manipulate the text to align it with the knowledge they held. While it is advantageous that background knowledge be relevant and accurate to the topic, young readers need to be taught to integrate it with text information. Sometimes it may be necessary to re-evaluate and change schemata when textual information indicates its inaccuracy. When there is a mismatch between prior knowledge and text information, comprehension will not be facilitated.

Besides prior knowledge of the topic, other factors also influence how well the text will be comprehended. The manner

in which the text is written is such a factor. The way the sentences are connected, i.e., the cohesiveness of the text, is a significant determiner of comprehension (Freebody & Anderson, 1983). The reader also expects the text to have a structural organization. If those expectations are not met, which is frequently the case with poorly-structured stories, readers' comprehension, especially that of poor readers, will be seriously impaired (Brennan, Bridge & Winograd, 1986; Whaley, 1981). Because structure operates over the whole passage, comprehension will not be facilitated if the passage structure is disjointed. That is, if sentences do not follow logically from one to another and main ideas do not have supporting details, understanding will be minimal at best.

The comprehension of text, then, is dependent upon the text and the reader. Readers must be competent with the text and be able to draw information from many sources within the text and within themselves. This competence necessitates thinking about, connecting, evaluating, and integrating new and old information in order to decide on an interpretation that is consistent with both the text and the reader's knowledge.

How, then, can inferences be generated and thus, reading comprehension facilitated? The following section addresses these questions.

### How Are Inferences Made?

Reading comprehension is defined in terms of a number of cognitive processes which readers use in their search for meaning. Making inferences is one of these processes. To construct an inference the reader is required to fill in missing information or to connect propositions in the text that are implied by the author (Holmes, 1983 & 1987; Pearson & Johnson, 1978; Warren, Nicholas & Trabasso, 1979). Making inferences is necessary because authors do not include every detail and description of action and character when they write. If they did, then the text would be dull, uninteresting and a chore to read. In essence, authors assume that readers will bring a certain body of knowledge to the text and will use that knowledge to bridge the missing links which are apparent in print. Consequently, readers fill in this missing information on the basis of what they already know or make connections with text facts as they read; that is, they infer. In fact, the text itself does not specify a particular meaning: This is negotiated between the author and the reader, with the teacher playing the role of guide in helping students negotiate a meaning (Pearson, 1985).

To make an inference, readers integrate the information in the text with information they already know to make a plausible interpretation of that text (Phillips, 1989a). Readers hypothesize, analyze and evaluate the text information and their background knowledge. The pieces of information are



considered and meshed together with the reader concluding that a critical piece of information that was not explicitly stated in the text but necessary for its understanding has now been accounted for. It is not possible to comprehend without thinking about ideas and using a variety of information to understand text (Carr, Dewitz and Patberg, 1989). Using text information and background knowledge, readers infer the missing information (Carr, 1983), "...construct complete interpretations that are consistent with both..." (Phillips, 1989a, p. 4) and thereby construct meaning from information on the page and information already in their minds (Beck, 1989).

In making inferences, readers seem to take on the role of detectives. First, they recognize that a piece of relevant information is missing or a relationship is implied. Subsequently, they search the text and their background knowledge for clues that will help them settle on the relationship or solve the problem that is interfering with their progress in understanding the text. Once the problem has been resolved (i.e., an inference made), readers then proceed with the text and the process of inference-making continues as readers strive for understanding.

Although making inferences is a complex process, it is a necessary and vital component of meaning construction. The text itself does not state all the information explicitly and any number of relationships are implicit in all types of text. Phillips (1981) contends that

Inferences perform at least two basic functions. In the first place, they allow the reader to extend and enrich the explicit meanings intended by the author. Second, inferences connect the explicit events with the events which are not explicitly treated by the author, but rather left understood or implicit. (p. 9)

As children read, the text provides the basic foundation by which they construct their interpretations of what the text means. The text is no more than a group of separate words and sentences if the implied relationships are not resolved. In other words, readers have not comprehended.

The following section discusses young readers in the context of what they are and are not doing in instances where making inferences is necessary in order to understand text.

#### Inferring and Young Children

Young children are capable of making inferences about their surroundings (Hansen, 1981a), and in their daily activities (Hansen and Hubbard, 1984). Indeed, children make many inferences about the world around them prior to entering school (McIntosh, 1985). Why, then, are children reported to experience difficulty in making inferences when they are reading?

Reading research gives a variety of reasons for the suspected lack of inference-making among young readers. Based on the scope and sequence charts of basal readers, inferring

is not introduced until fifth or sixth grade. Because it is considered to be a high level thinking skill, teachers do not ask children in the early grades to make inferences because the task is considered to be too difficult for them (McIntosh, 1985). While inferential comprehension may require a much deeper thought process than does literal comprehension, children will be unable to answer either literal or inferential questions if the text is too difficult for them. This should not imply that they are unable to make inferences but that they cannot make them with that particular text because it is beyond their level of comprehension. However, when the text is at the instructional level of the reader, both average and poor readers are able to make inferences (Malicky & Schienbein, 1981).

A study by Allen (1985) seems to corroborate the conclusion by Malicky and Schienbein. Allen investigated the ability of children in grades one, two and three to make inferences on stories that were self-dictated, peer-dictated and written by adults. Based on free and probed recalls one of the findings showed that the children in all three grades demonstrated equal ability to make inferences on their own stories. Fewer inferences were made on peers' stories while the least number were made on adult-authored stories. Undoubtedly, background knowledge of a story would be most relevant for its child-author. While coherence and structure of the peer-dictated stories may be somewhat lacking, the

actual text would likely be closer to the instructional level of the peer group than the text of those stories written by adults. That is, each child would be more competent with the language of the stories dictated by themselves and their peers.

Children are taught to learn textual information by remembering it, instead of being taught to relate it to something they know (Hansen & Pearson, 1983). By demonstrating the 'new to known' relationship, young children can also improve their inferential comprehension. Hansen's research with second graders of average ability supports this premise (Hansen 1981a, 1981b). An instructional strategy was used to demonstrate how a reader's own relevant life experiences could help him or her understand a story. The strategy included discussing the topic, discussing the children's relevant experiences, questioning by the teacher, and making predictions. The questions centered around important story events and were phrased in the form of "What do you do when..." and "What do you think (the character) will do?" Children's respective responses were written on strips of grey paper representing the brain and on orange strips representing new knowledge. At each session, the reason behind the strategy of relating new knowledge to what was known was reviewed. Weaving the 'knowledge' and the 'brain' strips together was the follow-up activity--a concrete representation of the inferring process. This instructional

strategy improved not only inferential comprehension but literal comprehension as well.

The new-to-known strategy was also extended to include good and poor fourth grade readers (Hansen & Pearson, 1983). The results showed that on inferential questions poor readers benefited from the instructional method but it did not affect the performance of good readers on those questions. In Hansen's (1981a & 1981b) and Hansen and Pearson's (1983) studies, the readers' inferential comprehension improved because they had been instructed to see the connection between the text information and their own background knowledge. A test at the end of the Hansen (1981a) study indicated that connecting the 'new to known' strategy was not transferred to silent, independent reading of familiar and unfamiliar material.

However, the silent, independent reading was an unusual activity for these average second graders (Hansen 1981a). Would the posttest results have been different had silent independent reading been a regular part of these children's daily reading classes? Conversely, in the Hansen and Pearson study (1983) with grade fours, posttest results on a common story showed that on inferential questions both good and poor readers performed well. In addition, the performance of the experimental group of poor readers was equivalent to that of the good readers in the control group. It appears that the instructional strategy of questioning, discussing and weaving

may be more beneficial for poorer readers. There was also evidence of the strategy being transferred in the independent reading of this older group.

These conclusions are corroborated by Reutzel and Hollingworth's experiment (1988) in which a generative-reciprocal inference procedure (GRIP) was used with third graders to teach inference-making. The procedure included explaining how inferring would be helpful during reading, highlighting and then listing key vocabulary on teacher-designated and student-designated passages and finally playing a GRIP board game. In comparison with the basal and control groups, the experimental group significantly outperformed the other two on a variety of inferential tasks. These third graders were active participants in the process of making inferences; they were actively involved in organizing and relating new information to that which was already known (Reutzel & Hollingsworth, 1988). This particular procedure focused the readers' attention and thinking on two important aspects of inference generation--the importance of connecting background knowledge to text information and the need to be sensitive to text clues such as vocabulary.

It seems apparent that if children are not made aware of the connection between background knowledge and text information, they will not make inferences in reading as spontaneously as they do in other activities. How can they be made aware of this connection and thus increase their

performance on inferential tasks? The answer seems to lie in comprehension instruction. This begs the question: What do we teach young readers that will enable them to be successful inference-makers? Comprehension instruction must demonstrate what inferences are, why they are necessary and helpful in understanding what is read, and how they can be made.

In order to know what inference strategies to teach, they must be identified. Through the examination of the inferences of grade three readers and identification of the strategies they use in making those inferences, the present study will increase our understanding of how young children comprehend text.

In order to determine what those inferences and inference strategies are, each must be defined in terms of this investigation. The definitions of inference and inference strategy are addressed in the following section.

#### Defining Inferring and Inference Strategy

Many reading researchers agree that making an inference involves using text information and information in the head (Allen, 1985; Beck, 1989; Hansen, 1981a, 1981b; Moore and Kirby, 1988; Phillips, 1986, 1988, 1989a). Making an inference is a cognitive process which involves the construction of meaning (Beck, 1989; Phillips, 1987, 1988). The text information and background knowledge are integrated, organized, and evaluated by the reader resulting in a plausible interpretation of the meaning of the text. These

interpretations are complete and consistent with both the reader's background knowledge and the text information (Phillips, 1987, 1988).

Because inferring is such an integral component of reading comprehension, the definition of inference is closely connected to the definition of comprehension. In this study, Phillips' definition of inference is adopted (1987, 1988, 1989a). Inference is defined as: An interpretation of text that is constructed from and consistent with the text information and background knowledge. This interpretation results from either the readers' integrating text information with their background knowledge or incorporating text cues in order to understand the implicit meaning of the text.

Carr, Dewitz and Patberg (1989) define strategy as the way in which the reader constructs answers from textual information and prior knowledge. Collins, Brown and Larkin (1980) define strategies as "...the ways that skilled readers deal with the difficulties that arise in comprehension..." (p. 385) as they revise models for understanding text. Strategies are plans that readers use which are flexible and adaptable depending on the situation (Duffy & Roehler, 1987) and are the purposeful means of comprehending text (Olshavsky, 1976-1977). According to Phillips (1988) "The term strategy was selected to label a plan or technique used by readers for achieving an interpretation independent of the correctness of the interpretation" (p. 208).



What readers do in their attempts to construct meaning could be labeled a strategy, i.e. a strategy has been used when the reader has been able to solve a problem or overcome a difficulty that was interfering with the meaning of the text. In this study, an inference strategy is defined as: A plan, or technique used by the reader to make an inference. Both definitions are derived from Phillips (1987, 1988, 1989a) and have been adopted for this study primarily because this investigation is for the most part a replication of the Phillips' 1988 work with sixth graders. While other definitions of inference and inference strategy are equally as valid for those particular studies for which they were used, Phillips' definitions were more comprehensive for this investigation of grade three readers.

Phillips' definition of inference emphasizes the necessity of meshing text information and background knowledge to decide upon an interpretation. It is possible that young readers, when making inferences, may emphasize one or the other, i.e. they may base their interpretations primarily on either text information or background knowledge instead of integrating the two. However, with Phillips' definition, an inference is judged to have been made when the reader's interpretation is based on connecting the new and the known--integrating text information and background knowledge.

The inference strategy definition used by Phillips takes into account whatever manner of plan or action that readers

may take in interpreting text regardless of whether or not they successfully decide on the most plausible interpretation. Readers and especially young readers may in fact use a number of strategies with varying degrees of success. This definition allows for the identification of any plan or action used as the reader attempts to settle upon an interpretation regardless of whether the attempt was successful or not.

#### Major Studies on Inference Strategies

The studies by Collins, Brown and Larkin (1980) and Phillips (1988) are major studies on inference strategies in understanding text. While both provide the basis for this study, Phillips' investigation of the inference strategies of grade six readers provides the impetus. A review of each study is necessary because there will likely be some similarities and differences among the inference strategies used by adult and grade six readers and the inference strategies used by the grade three readers investigated in this study. The investigator adopts the analysis of the Collins, Brown and Larkin (1980) study presented in Phillips (1988) as the best analysis of their work and her description follows (pp. 195-197).

According to the Collins, Brown and Larkin study with adults in 1980, text is understood using a progressive-refinement theory. That is, the reader's initial model of the text is progressively revised and evaluated until he or she eventually converges on a model that best fits the text. Each

revised model of text answered some of the questions raised on the text information thus leading to a subsequent model that was more refined but that also limited the possibilities for answers to questions that remained. To determine how these models were constructed and revised, adult subjects, who were skilled readers, were given texts that were difficult to understand. As the subjects attempted to understand these texts, they were asked how they processed the text. These thinking protocols were recorded.

The results of the Collin's et al. (1980) study show that these skilled readers used eight problem-solving strategies in order to determine the meaning of the texts. These strategies were used to revise and refine different models until the readers finally converged on the model that seemed to best fit the text. These problem-solving strategies which the authors compared to the strategies used by people as they attempt to solve crossword puzzles are as follows:

1. rebinding - generating a new value for a variable slot when the original value leads to conflict, i.e., think of another word for that variable slot.
2. questioning a default interpretation - trying a new interpretation of the value because the original interpretation is questioned when it does not enable the reader to progress in his or her understanding of the text.

3. questioning a direct conflict - occurring when the slot value just assigned conflicts with new information, i.e., the reader cannot find support for a particular interpretation that has just been made.
4. questioning an indirect conflict - occurring when there is a conflict between an interpretation previously made and new information, i.e., the reader cannot find support for a binding that has been made previously.
5. near shifting of focus - moving to another new question closely related to one the reader is unable to solve.
6. distant shifting of focus - moving to another new question which is distantly related to the one the reader is unable to solve but will open up other options.
7. case analysis - trying several interpretations to see which one fits best with other facets of the text.
8. most likely case assignment - deciding on the most plausible interpretation from the several models considered.

The Collins' et al. (1980) study also concluded from the verbal reports that these skilled readers applied tests on a complex evaluation process to determine the plausibility of each text model they constructed. These tests were:

1. the plausibility of the assumptions and consequences of the model - parts of the model are evaluated against the readers' own background knowledge.
2. the completeness of the model - parts of the model are evaluated against text information.
3. the interconnectedness of the model - parts of the model are evaluated with respect to how they fit together with background knowledge and text information.
4. the match of the model to the text - assumptions and consequences of the model are weighed in terms of how well they match particular aspects of the text.

The Collins, Brown and Larkin theory of text understanding is one of progressive refinement in which the reader, utilizing several problem-solving strategies, progresses from an initial interpretation of a text to a refined model which is more plausible (Phillips, 1988, pp. 195-197).

The Phillips (1988) study extended the work of Collins, Brown and Larkin (1980) to investigate the inference strategies used by high and low ability readers in grade six as they attempted to comprehend familiar and unfamiliar texts. Proficiency or reading ability was determined by the readers' scores on the Vocabulary and Comprehension subtests of the Canadian Tests of Basic Skills (CTBS). Subjects were from two different Canadian urban areas--one on the prairies and one near the sea. Three passages with corresponding inference and

clarification questions were composed by Phillips on three events indigenous to each area (for a total of six passages) and were the text material for the investigation. Sixth graders in each city were divided randomly into two groups of high and two groups of low proficiency. Each group read either the familiar or the unfamiliar text, (i.e., one high-proficiency group read the familiar texts while the other high-proficiency group read the unfamiliar text). The same procedure was followed with the low proficiency groups. In individual meetings, readers were asked to express verbally what they were thinking as they read each text episode. The inference and clarification questions were asked if the readers did not report making an inference. Audiotapes of these sessions were made and later transcribed.

Phillips' (1988) study identified ten inference strategies used by these sixth grade readers and are presented as follows:

1. rebinding - the reader immediately substitutes another interpretation upon realizing that the first interpretation conflicts with text information.
2. questioning a default interpretation and/or a direct or indirect conflict - the reader questions a previous interpretation when he or she realizes that subsequent information conflicts with it.

3. shifting of focus - the reader asks other related questions that had not been considered previously when he or she realizes that his or her initial question cannot be resolved within that reader's interpretation.
4. analyzing alternatives - the reader does not decide on any one interpretation but will hold a number of possible interpretations tentative until more information becomes available.
5. assigning an alternate case - the reader temporarily digresses from the current interpretation when information in the text does not fit or subsequent information does not provide a solution.
6. confirming an immediate prior interpretation - the reader confirms an interpretation based on the information immediately following it.
7. confirming a non-immediate prior interpretation - the reader considers different interpretations but confirms an earlier one on the basis of subsequent text information.
8. assuming a default interpretation and transforming information - the reader attempts to confirm an interpretation despite inconsistencies between the interpretation and

the text. In doing so, new text data is misconstrued; the default interpretation is assumed or held to be the text model.

9. withholding or reiterating information - the reader repeats an interpretation made before or does not respond to questions requesting information.
10. empathizing with the experiences of others - the reader identifies personally with the text situation and projects himself or herself into it without any loss of story focus or the introduction of inconsistencies with either the reader's interpretations or with the text.

(Phillips, 1988, pp. 202-206)

Similarities and differences were found between the strategies used by adults and those used by the young grade six readers. The Phillips' (1988) work found that while rebinding (strategy 1) was the same for both groups and the first seven adult strategies corresponded in some ways with the first four young readers' strategies, there was a major difference. That difference was that four of the young readers' strategies were not found in the adult group, indicating that these strategies had become automatic for the adults. In other words, the adults settled on the most plausible text interpretation much sooner than the young readers. The young readers were more deliberate in their



procedure to get to this point and might go through a number of strategies before finally deciding on an interpretation that was the most plausible and consistent with the text.

The pattern in which the young grade six readers used the ten inference strategies identified in this study was complicated. All readers used rebinding and questioning defaults (strategies 1 and 2) equally, i.e., they would substitute another interpretation immediately upon realizing that the first interpretation conflicted with the text and would question that interpretation if subsequent text information conflicted with it. Analyzing alternatives and confirming immediately (strategies 4 and 6) were used more frequently than any other strategies by all readers. That is, the grade six readers would hold a number of possible interpretations tentatively until they had more information rather than settling on one particular interpretation. They were also just as likely to confirm an interpretation on the basis of information immediately following it. Based on the different strategies used by readers of both high and low proficiency using familiar and unfamiliar texts, "...there was no clear-cut connection between background knowledge, reading proficiency, and strategy use. Strategy use was determined by an interaction between proficiency and background knowledge but not by either alone" (Phillips, 1988, pp. 216-217). In other words, the grade six study indicated that reading

ability and background knowledge determined what inference strategies were used by the young readers.

The Phillips (1988) study raised questions that motivated the present study. Do readers at the grade three level and of different levels of proficiency use the same strategies or different strategies as the grade six groups to understand text? What inference strategies are used more frequently by skilled readers? by unskilled readers? Why do skilled readers' inference strategies prove to be more successful in comprehending text than those strategies used by less proficient readers?

The present investigation will identify the inference strategies of grade three readers, will show whether or not there is a relationship between their reading proficiency and the inference strategies they used, and will provide the basis for comparison with the grade six strategies of the Phillips (1988) study.

#### Reading Proficiency and Inferences

Proficiency or skill in reading is probably the most obvious factor that distinguishes one group of readers from another at any age level. Studies on reading comprehension continue to show ways in which very proficient readers differ from those who are less proficient. Proficient readers appear to use their strengths as a reader and a language user effectively; whereas, other readers are not confident about their reading or sure of their purpose for reading (Goodman &

Burke, 1980). So, is it something that readers are doing or are not doing that makes them proficient? It would seem likely that even poor readers have some strengths. Is their low proficiency the result of their misunderstanding of what reading is all about or due to the difficulty of the materials they are using?

With regard to inferential comprehension, better readers make more quality inferences (Malicky & Schienbein, 1981, Tierney, Bridge & Cera, 1978-79). Again, researchers give a variety of reasons why readers' proficiency accounts for the quantity and quality of the inferences made. Allen (1985) concluded that because the more capable readers were the more skilled decoders they were better able to make use of more textual cues to make inferences. Other reasons are summarized as follows. Good readers possess greater metacognitive awareness (Bridge & Tierney, 1981), use more reasoning skills to integrate text information with background knowledge (Davey, 1989), use better strategies (Davey, 1989; Duffy & Roehler, 1987), are better and more successful problem-solvers (Holmes, 1983), are differentiated from poor readers by the quality of their reasoning and thinking (Phillips & Norris, 1987) and finally are able to organize and synthesize information because they are more aware of the organization of the text (Wilson, 1979).

Conversely, there is also research evidence to show that poor readers make fewer inferences than good readers and make

inferences of an inferior quality. Poor readers lack the necessary inferential comprehension instruction (Hansen & Hubbard, 1984), are mislabeled because they are using material beyond their reading level (Holmes, 1983; Malicky & Schienbein, 1981), lack the emphasis on meaning in their reading programs (Malicky & Schienbein, 1981) and lack the ability to focus without guidance (McIntosh, 1985). Readers will not comprehend if they are asked to interpret text beyond their instructional level.

"Proficient readers exploit to the fullest their own knowledge, experience and language which they bring to their reading to help them set appropriate purposes as they read..." (Goodman & Burke, 1980, p. 45). It appears that less proficient readers are unable to use their strengths as readers or are unaware that they have any. Phillips (1987) contends that when reading proficiency is low, sufficient background knowledge will not make any difference to performance. "... It seems then, that reading proficiency is a necessary condition for overall performance while background knowledge is not" (p. 17).

Because the primary purpose of reading is to construct meaning, the goal of comprehension instruction is to produce better readers. In order to get readers to become more effective and more efficient comprehenders, it is necessary to ascertain what they are doing and/or are not doing that promotes comprehension. Armbruster and Brown (1984) maintain

...that if less successful students can be made aware of (a) the differing demands of a variety of tests to which their knowledge may be put, (b) simple rules of text construction, (c) the role of their characteristics, and (d) basic strategies for reading and remembering, they cannot help but become more effective learners. (p. 280)

Using textual materials at their level of competency, comprehension instruction must be designed to consider the proficiency levels of all readers. Thus, reading will likely become a challenging and thoughtful construction of meaning. However, reading competence is developmental in nature; the developmental nature of inferential ability is the subject of the next section.

#### Developmental Inferential Comprehension

Much of the literature on developmental inferential comprehension shows that the ability to construct implied relationships seems to develop with age. Because of this prevailing evidence, basal reading programs and classroom instruction have not included or emphasized the inferential skills in the reading instruction of primary children. There is conflicting evidence on whether or not young readers can integrate text cues in order to generate inferences. There are reasons to believe that both the quantity and quality of inferences increases and improves, and that the making of inferences will eventually become more automatic as the reader

matures. Increases in world knowledge and memory capacity, developing language experience, awareness of how texts are written and ability to integrate text cues are some of the reasons suggested for improved performance on inferential tasks.

Much of the developmental research has focused on the ability to make inferences in order to supply important missing information in a text (i.e., filling empty slots). The results of studies by Paris and Lindauer (1976), Paris and Upton (1976) and Paris, Lindauer and Cox (1977) suggest that young children's ability to comprehend and remember implicit text cues in sentences, infer meaningful relationships in stories and infer consequences from sentences respectively, increases with age. Moreover, they concluded that this increase in ability may not be due to an increase in memory capacity but suggested that older children may be more deliberate in their plans to remember information than younger children. However, it cannot be concluded that young children cannot infer because they have not remembered--inferring and remembering are not synonymous.

Johnson and Smith (1981) examined factors that might limit third and fifth grade children's inference-making when reading to understand a lengthy narrative. While both age groups had the basic competence to make an inference, the younger group made fewer inferences when the sentences containing the premise information were separated by

intervening text, even though that information was available in memory. Johnson and Smith suggested that young children are not as likely to integrate separate pieces of information to construct an inference but will be more successful when that information is located in adjacent sentences or within the same story paragraph. They concluded that a major distinction between the younger and older readers was the latter's ability to integrate meaningful cues to generate inferences regardless of their location in the story. It is possible that the length of the story (1700 words) and the number of questions for the fifteen premises and inferences in the narrative may have taxed the younger readers beyond their attentiveness.

Ackerman (1988) and Badzinski (1989), while drawing similar conclusions as other researchers, have also found somewhat differing results. Ackerman (1988) questioned whether or not developmental differences in making certain kinds of inferences were due to inference ability. He seems to concur with Johnson and Smith (1981) in hypothesizing that children make different kinds of inferences in different situations; whether or not they make inferences depends upon the contextual information and how that information may cue or constrain the particular inference.

The objectives of Ackerman's research were to investigate children's dependence on contextual information and determine how efficiently that information was used and integrated to

change or modify inferences. The participants were first and fourth graders and college students who answered questions on fifteen six-sentence stories about daily activities. It was found that the young first graders were sensitive to each source of information and did integrate them, that the younger readers understood and made sense of the story but not in the same way that the adult readers did, and once the younger readers had settled on a relationship, they would not change or modify the inference even if succeeding cues did not support it. Ackerman suggests that the differences may be due not to inferential ability alone or to the ability to integrate textual information, but "Instead the differences may have to do with concept knowledge and concept prominence in the listener's organization and representation of a story" (Ackerman, 1988, p. 1441). Even though the general knowledge of these young readers was increasing, their knowledge of simple daily activities such as swimming or drying clothes would not have been as extensive as that of the older children and adults.

Unlike many of the other developmental studies, Badzinski (1989) investigated how linguistic variations of the text would influence inferential processing. Because verbs often imply important text information, their intensity was varied in two versions of five constructed short children's stories. Stories with more forceful verbs (e.g., crashed, grabbed, staring) were labeled high-intensity stories, while those



using less forceful or aggressive verbs (e.g., fell, took, looking) were labeled low-intensity stories. It was predicted that the likelihood and speed of inferential processing for the high-intensity stories would be greater than for the low-intensity stories.

Two experiments using the same stories and accompanying sets of questions were carried out--one with college students and the other with children in kindergarten, grades two and four. For children and adults the results of both experiments demonstrated that inferences were made more readily, and the target inferences were more likely to be constructed during recall on the high-intensity than on the low-intensity texts. The speed of inferential processing did not differ for either group nor was there any clear age-related differences in children's ability to make inferences when age-related abilities such as vocabulary and general knowledge were controlled.

Unlike the findings of other studies (Paris & Lindauer, 1976; Paris & Lindauer & Cox, 1977; Paris & Upton, 1976), the findings of the Badzinski study indicate that the better recall performance of the older children may be accounted for by age-related skills other than inferential abilities. Because of their language development, older readers and adults were more sensitive to changes in story verbs while the younger ones who had a less well-developed language base would have been probably unaware of the implications of the verb

changes. That is, it would appear that limited conceptual knowledge would have made them less sensitive to the implied meaning of the stronger verb forms in those constructed stories than the older readers. Consequently, fewer inferences were made by the younger group. An interesting question is whether or not changes in the subject nouns of stories would result in similar findings as the changes in story verbs? Because of the apparent influence of verb changes, one could generalize that if the subject nouns of stories were varied according to intensity, younger children would also make fewer inferences than older groups of readers because of limited concept development rather than lack of inferential ability.

In the studies reviewed a number of reasons have been suggested as to why younger children construct inferences differently from older children and adults. Most of the studies show evidence that even very young children have the ability to make inferences and that ability increases with age. Badzinski (1989) indicated that a change in the intensity of story verbs, not an increase in ability, was indicative of increased inferential performance. Johnson and Smith (1981) concluded that the information-processing complexity of the task caused younger children to make fewer acceptable inferences than older children and adults because they were unable to integrate different sources of text information.

This finding conflicts with that of Ackerman (1988) and Schmidt and Paris (1983) who concluded that young children can in fact integrate a number of cues and make use of contextual support to confirm an inference. The increase in cue number and cue type, not the location of the cues, also increases performance (Paris & Lindauer, 1976). Young children's low performance on inferential tasks was not due to inability to recall text information because they were able to imitate the actions of the sentences (Paris & Lindauer, 1976) and generate a story (Paris, Lindauer & Cox, 1977) indicating that they had inferred the relationships from the sentences.

Some developmental differences have been suggested to explain why younger children make fewer inferences and make inferences of an inferior quality. Their general knowledge and language development are not as organized or as well-developed as those of older children and adults; clue integration may vary the inferences made in different situations; and young readers are more dependent on contextual support than older groups.

In the writer's investigation of the inference strategies of grade three readers, it is possible that differences similar to those just specified will be displayed in varying degrees by those readers. In a heterogeneous class, it is very likely that students of comparable age will differ from each other in: General knowledge, confidence with language (how to use it and how it works) and in their understanding

that reading is constructing meaning not just identifying words. To decide whether or not these students can make inferences, this investigation will be guided by conditions set down by Phillips (1989a)--that the ability to make inferences is influenced by the reader, the text and the task.

## CHAPTER 3

## THEORETICAL FRAMEWORK AND METHODOLOGY

The purpose of the present study was to identify the inference strategies used by a select group of grade three readers and to determine whether or not there was a relationship between reading ability and strategy use. The theoretical framework for the study was partially provided in the preceding chapter where inferring was defined and its role in reading comprehension was discussed. The theoretical framework for the study is integrated in this chapter. Methodologies commonly used in reading process research are reviewed and evaluated. A rationale for choosing the methodology for the present study is presented. Finally, the selected methodology is described in detail and the sample, materials, procedure, coding, and analysis of the data are outlined.

## Reading Process Methodologies

Reading comprehension is a very complex process involving many attendant processes including hypothesizing, predicting, synthesizing, monitoring, evaluating, and inferring. It is with the latter process that this study is concerned, specifically, the identification of the inference strategies used by grade three students when reading a story.

A number of studies were reviewed in order to decide which methodology or combination of methodologies to use in order to best identify the inference strategies. Based on the

definition of inference guiding this study, a method had to be selected that would provide the best window into how young readers integrate their background knowledge and text information as they construct meaning from written text.

You will recall from the previous chapter that reading researchers use a variety of methodologies to determine what seems to be happening when children read. Free recalls, probed recalls, and questioning on oral and silent reading are used frequently (though not exclusively) in an attempt to understand what goes on in the minds of readers when they comprehend. In a free recall, readers are asked to retell in their own words a story that they have read, recalling as much information as they can. In a probed recall, questions or probes based on the free recall are used in an attempt to elicit more information and to assess whether readers know more about the story than they were able to organize and recall on their own without probing. On the basis of the recall analysis conclusions about what the readers did while comprehending the text are drawn.

Questioning after oral and/or silent reading is another method that has been used to determine whether or not a reader has comprehended. By far, the majority of studies reviewed favored the use of a variety of questions to assess comprehension. Responses to questions which may be true-false verification (Badzinski, 1989; Paris & Upton, 1976), multiple-choice (Goetz, 1979; Walker, 1987), a combination of literal and inferential questions (Dewitz, Carr & Patberg, 1987;

Hansen, 1981b; Reutzel & Hollingsworth, 1988) or inferential questions only (Allen, 1985; Holmes, 1987; Malicky Schienbein, 1981; Sundbye, 1987) are used to make judgments about readers' comprehension.

Free recalls, probed recalls and post-reading questions were judged as unsuitable methodologies because they assess the product of comprehension. How young readers integrate text information and background knowledge could not be measured using the aforementioned methods. It would be difficult and extremely unreliable to draw conclusions about the strategies children use to make inferences based on their responses to questions after the inferring has been done.

Another method often used in reading process research is the use of think-aloud or verbal reports. Verbal reporting requires readers to report aloud their thinking while they construct meaning. Reading is a thinking activity, thus what actually occurs in the reader's mind during meaning construction cannot be seen. Why and how readers arrive at the text interpretation that they do, occurs in the readers' heads and only the readers, to the extent possible, can give information about it. Verbal reporting provides useful information on the process of comprehension because it can indicate how, when and whether readers use different sources of information as they develop their interpretations of the text (Johnston, 1983).

The validity of using verbal reports has been questioned in the literature. According to Nisbett and Wilson (1977) verbal reports cannot be accurate because people cannot directly observe how their minds work and report on it. Others claim that verbal reports lack quality and quantity because all kinds of information cannot be reported in exactly the same way and they present a particular problem for those with inadequate verbal skills (Cavanaugh & Perlmutter, 1982).

In defence of verbal reporting data, Steinberg (1986) argued that a verbal report adequately represents mental activity as one's consciousness is more tightly focused because the attention is fixed on the task of verbal reporting. Based on their experiences, Bereiter and Bird (1985) noted that verbal reporting slows down the reading process and "...probably reveals only certain elements of the strategic activity going on during reading..." (p. 132). They maintain, however, that the slowed pace does not appear to interfere with the continuity of the reading as the reader has slowed the reading to solve a comprehension problem. This could have a positive effect on instruction.

In the context of research of students' critical thinking ability, Norris (1990) found that eliciting verbal reports did not change or alter subjects' performance or their thinking on a multiple-choice critical thinking test. Furthermore, Ericsson and Simon (1980, 1984) contend that while people may omit and give incomplete information, the verbal report is not



invalidated. These reports are valid when clear probes have been given and the protocol taken immediately after the task was completed. Garner (1982) found that minimum time between task completion and verbal reporting resulted in more complete reports. Verbal reports done immediately gave more detail on cognitive events and contained less trivial information than those given two days after task completion.

Ericcson and Simon (1980) conclude

... that verbal reports, elicited with care and interpreted with full understanding of the circumstances under which they were obtained, are a valuable and thoroughly reliable source of information about cognitive processes.... They describe human behavior that is as readily interpreted as any other human behavior. (p. 247)

In other words, information on cognitive processing can be reliably elicited through and interpreted from verbal reports under certain conditions. These conditions are: To use probes that are intended to elicit specific rather than general information and to take the verbal report immediately after the task has been completed.

Afflerbach and Johnston (1984) in their review of the use of verbal report data in reading research, concluded that the verbal report offers a unique view of cognitive processing and can provide valuable information when probes are constructed that will encourage the reporting of information relevant to

the investigation. According to Olson, Duffy and Mack (1984) verbal reporting can be "...best used to study the higher level processes in reading: the inferences, predictions, schema elaborations, and other complex cognitions that occur as a part of skilled reading..." (p. 255).

Data from verbal reports have been used extensively in reading research to identify strategic behavior in the cognitive processing of children of all ages and adults. The methodology was used to identify strategies used by tenth-graders in understanding concrete and abstract texts (Olshavsky, 1976-77), to identify and design comprehension strategies that could be used with grades seven and eight students in the classroom (Bereiter & Bird, 1985), to identify comprehension monitoring strategies of grade threes (Genge, 1987), to identify the inference strategies of grade sixes (Phillips, 1988) and those of skilled adult readers (Collins, Brown & Larkin, 1980). The readers' reports or verbalizations of what they were thinking as they were reading were a fairly good indicator of what they had actually thought as they interpreted the text. The strategies could then be inferred from the verbal reports.

Based upon an assessment of the existing methodologies used in comprehension research, I concluded that free recalls, probed recalls and different types of questions on oral and silent reading would not, by themselves, adequately answer the

question: What inference strategies do grade three readers use when they are interpreting a text?

The verbal report methodology was preferred because it would provide greater access to how the children were integrating their background knowledge and text information to construct meaning. The specific details on how verbal reports were used in this study are discussed next.

#### Methodology of the Present Study

A combination of verbal reports and questions (probes) was settled upon as the best methodology. Verbal reports would reveal, to the extent possible, the thinking processes involved in the readers' integration of background knowledge and text information. The questions (probes) would be used to complement the verbal reports. Questions would be used to elicit as much specific information as possible in instances where young readers would fail to independently clarify vague thoughts or make specific connections between the information in the text and their background knowledge.

The combination of verbal reports and questions was also selected because it worked well in two highly similar studies by Collins, Brown and Larkin (1980) and Phillips (1988) in identifying the inference strategies of skilled adult and grade six readers, respectively.

The section that follows describes the subjects who participated in the investigation.

### Sample

Two heterogeneous classes of grade three students in an elementary school in Central Labrador made up the sample for the investigation. The sample was comprised of thirteen males and seventeen females, none of whom were repeaters.

Twenty-one of the thirty children had transferred into the school at sometime between kindergarten and grade three, and nine had been attending the school since kindergarten. The enrollment of the school, including kindergarten to grade nine, was approximately 430 at the time the study was conducted.

The transient nature of the sample is due to the area's economic circumstances. The Central Labrador town is the center for travel and supply connections to many coastal Labrador communities as well as the site of a Canadian Forces Base. Consequently, the student population of the school is very transient with approximately 80-100 students transferring in and out during the course of any given school year.

Permission to collect the data was requested from and given by the school board and the parents. Copies of the letters requesting permission are included in Appendices A and B. The children were also given the freedom to choose at the outset whether or not they wanted to participate; they were also at liberty to discontinue at any time.

The following section describes the materials that were used in collecting the data.

### Materials

Children in the primary grades are exposed to a variety of reading materials. A major component of the primary reading program in the provincial schools is the basal reader which may be supplemented by children's literature selections, language experience stories and magazines. Since use of the basal has been and will likely continue to be a large part of the children's instructional reading program, a basal story was selected for use in this study. The story was taken from the second independent reader of the Nelson Networks Language Program (McInnes, 1987) recommended for grade two in the province's schools.

A basal story was used for a number of reasons. It was a complete story with a logical beginning, middle and ending and was presented as it appeared in the reader. The story itself was long enough so that the attention and interest of these young readers would not be taxed unduly. As this reading program was introduced in grade two in September 1989, the grade three children involved in this study would not have had prior exposure to the story. While the text was unfamiliar, the story content about two cats who are moved from their respective homes to share a new home when their owners marry was expected to be within most children's experience. Many young grade three children have had real and/or vicarious experiences with animals as pets. Moving residence was also within the realm of experience for twenty-

one of the thirty children in this study. Thus, it was considered that the text would hold the children's interest and be relevant to the experiences of most of the children and all of their friends. Finally, many inferences could be made from this particular story which was written at a level deemed to be at the independent reading level for many of the grade threes.

A story of minimal difficulty was necessary in light of the questions the investigation was attempting to answer. Since the investigation was trying to identify the inference strategies that the readers would use to comprehend the story, it was more likely that they would be able to integrate the text information and their background knowledge in a story where they did not have to expend undue attention on decoding. When text difficulty detracts from readers' interpretations, it cannot be concluded that they did not or could not make inferences. It could only be concluded that the story was too difficult and prevented the readers from making inferences and using strategies.

The selected narrative was divided into eight episodes, such that the first episode was identified as A, the second as B, ... continuing up to and including the eighth episode identified as H, as shown in Appendix C. An episode was taken to be a main story event and its accompanying description. Story episodes were used to ensure that there were meaningful stopping points for the readers to verbally report on their

thinking. It was considered essential that the readers not go through too much of the story information before telling what they were thinking, that is, how they were interpreting the text. Otherwise, information about how the readers were integrating the text information and background knowledge in constructing their interpretations might be forgotten. Verbal reports that were taken at consistent points during the reading of the story would likely contain more reliable and valid information on the thinking that had occurred in constructing the interpretation than those taken at longer intervals or at the end of the story. The narrative "Chou-Chou and Carolina" of approximately 450-500 words was used to elicit the children's verbal reports as they attempted to comprehend the text.

To determine how the children processed the implicit story information, each story episode was accompanied by two to four inferential questions for a total of twenty-one inferential questions. These questions were used as probes only in the event that a child did not independently report making an inference after reading a part of or a full episode. It was possible that the inference(s) were made but the reader did not verbalize the process. Furthermore, additional probe questions were asked if the readers did not provide an explanation with their initial response. These probe questions were in the form of "Why do you think so?", "What makes you think that?", or "How do you know?". If the readers

included the explanation in their response to the inferential question, then the supplementary probe questions were omitted. In addition, clarification questions were written for most inference questions. These were used if the readers were not clear in their initial verbal report or did not give enough information in reporting on the inference or in their response to the inferential question. All questions relevant to a particular episode were asked and responses given before the reader moved on to the next episode. Appendix C includes a copy of the story with the accompanying inferential, probe and clarification questions.

Each story episode was printed on a single page. The story episodes were laminated and made into a book form with the text appearing on the right-hand side of the page. The pictures that accompanied the basal were omitted from the story read by the subjects. Although many young children's stories have pictures, some of them do not; grade three readers are familiar with both types of stories. In a normal reading situation, young readers frequently use picture clues to help them understand and move through a story more quickly. The pictures usually contain evidence that may influence a reader's interpretation. Consequently, the pictures were omitted to optimize the number of opportunities for the grade threes to make inferences independently. In the absence of pictures, frequency of strategy use would likely increase, thereby providing more data with which to work.



The Vocabulary and Comprehension subtests of the Canadian Tests of Basic Skills (CTBS), Level 9, Form 7 (King-Shaw, 1989) complete the materials for the investigation. The percentiles achieved on these subtests were used to determine the reading proficiency of the grade three readers. The CTBS subtests were chosen to determine reading proficiency because they are used most frequently in Canada to measure students' ability in a wide range of skills.

How the data were collected from the grade three readers is described in the following section.

#### Procedure

When the materials had been selected, it was necessary to verify the appropriateness and suitability of the narrative story and the questions prior to the major data collection. A pilot study was carried out with a small number of grade two children. Four questions guided the pilot study: (1) How much difficulty would the children experience in reading this story? (2) Were the inference questions good questions (i.e., relevant, unambiguous) in relation to the story? (3) Would the verbal report methodology be appropriate to use? and (4) Would any changes, procedural or otherwise, be necessary with regard to the data collection planned for the grade three subjects?

#### Pilot Study

The pilot study was conducted with five children in grade two. An individual meeting was held with each child. The

purpose of the study was discussed and procedural directions were given. Each child was asked to read "Chou-Chou and Carolina" out loud and was told that they would be stopped every now and then to tell what they were thinking. Questions would also be asked after each episode, if necessary, in order to make the verbal report more explicit.

It was thought that the children might comment on the story's meaning during the reading of the episodes, (for example, say 'This is about a cat', or 'Carolina has a good home'...). None of the children involved in the pilot independently verbalized making any inferences during the actual reading of the story. Consequently, the inference questions were asked following the reading of each episode, when the grade twos did not verbally report making inferences. These were followed by the supplementary probes if explanations of thinking were not given and by the clarification questions if the inferences were not clear or more information was deemed necessary. These clarification questions were necessary when the children changed their minds, were indecisive or gave more than one answer. Some examples of these clarification questions are presented next.

#### Example 1

In response to the first inferential question a child had said that Carolina was a dog. When asked "Why do you think Carolina is a dog?", he responded "'Cause she has her own dish and she can purr on ... no, a cat!". Since no further

information was forthcoming, a clarification question was necessary 'why did you change your mind?'

#### Example 2

When asked "What do you think Chou-Chou is nose to nose with?", the child responded "Carolina or the mover's van or something". Since the response was indefinite, the child was asked 'What makes you think Chou-Chou is nose to nose with something?'. As this reader appeared to be uncertain, the clarification question was asked in an attempt to clarify the child's thinking by eliciting more information.

#### Example 3

On episode G, a child said that Chou-Chou and Carolina were "...scared of each other." Since no further explanation was given, the question "What makes you think they were scared of each other?" was asked to encourage the reader to give a more explicit account of why he thought both animals were scared of each other.

From the pilot study, it was concluded that the grade twos were successful with reading the story and understanding the questions. They did experience difficulty remembering and pronouncing the names of Carolina and Chou-Chou. Consequently, a decision was made to tell the grade three subjects those names if they had the same problem. The names were also included in the directions given to subjects prior to reading the story.

On the basis of the pilot study, it was concluded that neither the story nor the questions would present any major problems for the majority of the grade three subjects based on the level of difficulty experienced by the grade twos. Also, it was concluded that the inferential questions would likely have to be asked after each episode was read since none of the children in the pilot study verbally reported making inferences independently. Probe and clarification questions might also be necessary in order to elicit as much information as possible about how the readers made the interpretation reported in the response to the inferential question. It appeared that the grade two readers responded to the inferential questions with very little detail or explanation of how they had made an interpretation. None of the five grade twos in the pilot study showed undue discomfort or uneasiness with thinking aloud, and indicated that they enjoyed the story. In giving their responses and in the concluding conversation they talked freely about their own pets and made comparisons and contrasts between them and the pets in the story.

It was also concluded that the investigator needed to be more relaxed and less formal when giving directions, and making conversation with the children. The audio-taping of the pilot study also indicated the necessity to ensure that the readers were seated comfortably and close enough to the

microphone to be recorded clearly. Equipment that worked well was also noted to be essential.

Keeping in mind the seating of the readers for audio-recording, a fully operational tape recorder and the possible need to pronounce the names of Carolina and Chou-Chou, it did not appear that any other procedural changes would be necessary prior to collecting the data from the grade three readers.

#### Data Collection

In order to familiarize the grade three subjects with the purpose and procedure of the investigation, a total of five meetings were held with each of the two grade three classes. The first meeting of about twenty minutes described what the investigator wished to do, why the children's help was necessary, the purpose of the CTBS subtests, and the distribution of a letter of consent to be taken home to parents. The children were asked to return the letters regardless of whether parents gave their consent or not. During the second and third meetings the CTBS Vocabulary and Comprehension subtests were each administered separately to each class group.

When the CTBS subtests were completed, a fourth meeting was held with each of the grade three classes. During this meeting, the children as a class worked through three short practice passages (with inferential, probe and clarification questions, if necessary). The passages (two with and one

without pictures) were used in order to make the children familiar with the data collection procedure and the tape-recorder. The practice passages are included in Appendix D. The groups were encouraged to ask any questions or express any concerns that they had about the investigation.

At the fifth and final meeting, each child was met individually in a small room in the school for a session that lasted anywhere from 25-40 minutes. A brief conversation took place at the beginning of the session to make each child feel comfortable and to establish whether there were any further questions about the procedure. Subsequently, each participant was instructed as follows: "I would like you to read this story about Chou-Chou and Carolina out loud for me. I'll ask you to stop every now and then so you can tell me what you are thinking; what thoughts, ideas ... anything that comes to your mind as you read along".

Inferential questions were asked if the child did not report what he or she was thinking about the episode after it was read. These were followed by supplementary probe and clarification questions, if necessary. The use of the clarification questions depended on the response to the inferential and/or probe questions. That is, clarification questions were asked if a child's initial response was not clear, indecisive or if the reader changed his or her mind. Each reader read an episode orally and responded to the questions relevant to it before proceeding to the next

episode. If readers forgot and attempted to proceed to the next episode (page) of the story before the questions were asked or completed, they were reminded not to do so until all questions had been asked and answered.

When all episodes had been read and all questions answered, the children were asked whether or not they had any comments, questions or concerns about the story. Subsequently, they were thanked for their participation and help in the study. The meeting with each individual reader was audio-taped and transcribed verbatim at a later date.

#### Coding the Data

Each student's session was transcribed from the audiotapes to provide the data for the study. A summary of each child's verbal report (protocol) was written to get a sense, a feeling of what each one was doing, or not doing, as the story was interpreted. The summaries were written to get some general ideas of the interpretations that the readers had constructed about the story and how they had decided upon these interpretations.

Following the summary writing, each protocol was divided into idea units using the procedures developed by Kintsch and van Dijk (1978) in developing their processing model of text comprehension and production. Kintsch and van Dijk proposed that the basic meaning of a text, whether read or spoken, can be represented by a list of propositions. The proposition or idea unit "... must include first a predicate or relational

concept, and one or more arguments" (p. 367). Thus, meaning is expressed in the simplest independent form of idea units. This procedure was also used by Genge (1987) and Phillips (1988). The total number of idea units varied across protocols, depending on what and how much each subject had to say in response to inference, probe, and clarification questions.

Subsequently, an inference strategy(s) was assigned to each idea unit using Phillips' (1988) grade six strategies as guidelines. The majority of the idea units could be classified under seven of the grade six strategies. The exceptions were the idea units which indicated that the readers had relied completely on the text information or on their background knowledge to confirm or justify a particular response. These strategies did not correspond with any of grade six inference strategies. In cases where readers were not clear in their interpretations and/or responded in an incoherent and repetitive pattern no strategies were assigned. Totals of each strategy for each of the thirty readers were also calculated.

Because the assignment of strategies may be subjective on the part of the investigator, a reliability measure was introduced. All protocols, divided into idea units and with assigned inference strategies, were reviewed by a reading expert in the field of inferential comprehension. An 89% rate of interrater reliability was found for the assignment of



strategies. A complete sample protocol divided into idea units and assigned strategies is given in Appendix E.

#### Data Analysis

Descriptive statistics for each strategy total within and across subjects were computed. Means, standard deviations, and correlations were calculated to determine the relationship between strategy use and reading proficiency.

## CHAPTER 4

### RESULTS AND DISCUSSION

The inferring process is an integral component of reading comprehension. For this reason, the present study was designed to identify the inference strategies used by grade three readers when reading a narrative. In this chapter an attempt will be made to answer the questions which guided this study. They are as follows:

1. What are the inference strategies used by grade three readers as they attempt to understand text? and
2. What is the relationship between reading ability and strategy use?

You will recall that readers' verbal reports provided the data from which the inference strategies were identified. The Vocabulary and Comprehension subtest scores of the Canadian Tests of Basic Skills (CTBS, King-Shaw, 1989) were used to determine reading ability.

This chapter presents the qualitative and quantitative results in response to the two questions which guided this study. The qualitative results respond to question 1 and include a comparison of the grade three inference strategies identified in this study with those of other readers identified in other studies. The quantitative results respond to question 2 in terms of the frequency of inference strategy use by the grade threes in relation to their reading ability.

## Qualitative Results

### Grade Three Inference Strategies

One of the purposes of this study was to investigate how grade three readers construct meaning when they read. This section answers the question: What are the inference strategies used by grade three readers as they attempt to understand text? The inference strategies were inferred from what the grade threes did as they constructed their interpretations during the reading of the "Chou-Chou and Carolina" story. Using the grade six inference strategies identified by Phillips (1988) and the strategy descriptions found in that work as a guide, the verbal reports of the grade threes were analyzed to identify the inference strategies of the younger readers. Nine inference strategies were identified from the verbal reports; these strategies were plans or techniques used by the grade threes to make an inference. An example of each inference strategy was selected from segments of readers' protocols and is presented here with an explanation of how that strategy was used by the reader in settling on his or her interpretation. The location within the child's response wherein the particular inference strategy to be illustrated was used is enclosed in brackets.

Strategy 1 - questioning a default interpretation and/or a direct or indirect conflict. A default interpretation is made based on insufficient, inconsistent or irrelevant information. Subsequent information conflicts directly or

indirectly with that default interpretation. The reader questions the default interpretation, abandons it, and settles on a new interpretation in light of the new information, deciding that this new interpretation is the better fit. An example of this strategy is taken from a reader's interpretation of episode B:

In episode A, the reader had made a default interpretation that Carolina was a woman because she owned a house, had a kitchen and maybe cooked. After reading episode B, the subject said "[Carolina is probably a cat] or something, because it (the text) said they have an owner."

After reading episodes A and B, the reader seems to have misinterpreted story information about the identity of Carolina and used insufficient information to make the interpretation that Chou-Chou is a dog "...because he has an owner." At this point, the reader appears to reconsider the information about Carolina and says that she is probably a cat or something.

When asked why the reader changed his mind about the latter, the response was "Because it (the text) said that they have an owner." Even though that information had also been given in the first episode, in addition to other information (litter box, purring) that would have helped determine Carolina to be a cat, the reader appears to have disregarded or overlooked this information. Questioning the default interpretation is triggered by the fact that Carolina and Chou-Chou had owners. Thus, when the reader realized that

Carolina could not be a woman because she had an owner, a new interpretation was made that Carolina was probably a cat.

Strategy 2 - analyzing alternatives. The reader uses this strategy when any one interpretation of the text data is not readily settled on because information is insufficient. Instead, a number of alternative interpretations are suggested which are held tentatively until more information becomes available. This strategy is identified by the use of such words as "might", "maybe", "probably", and "I think". An example of this strategy is taken from a reader's interpretation made in episode E:

When asked 'What do you think will happen now that the cage doors are open?' the student replied: "[They'll probably run around], [or they might stay in], [or they might run around and play], [or they might get into a fight.]"

In addition to these four alternatives, the reader was able to provide an explanation as to why each alternative was a distinct possibility. The reader explains that the cats might stay inside the cages because "Maybe they're afraid that something will happen to them in a new house"; they might fight because "They don't exactly know each other yet, so they might end up getting into a fight." She also goes on to explain that "They might not be afraid of things once they get out of the cage so they might feel happy. So they might just go around and feel like they're at their other house." With the information available, the reader is not yet certain what the cats will do when the cage doors are open. However, based

on the information that is available (e.g., the animals just moved from places they liked very much, they did not like being in the cages, they did not know each other...) and her background knowledge she considers at least four possibilities, does not confirm any one of these alternatives, but rather remains tentative until more information becomes available.

Strategy 3 - assigning an alternate case. This strategy is used when the reader is unable to resolve text information within an interpretation that has already been made nor does subsequent data provide a solution. The reader then seems to go off on a tangent and suggests a possibility that is removed from any interpretations already made. A reader's interpretation of episode D provides an example of this strategy:

The reader had already thought that Carolina and Chou-Chou felt sad about what was happening to them and had affirmed that both animals might be afraid. When posed the question 'What makes you think they might be afraid?', the reader responded "[Because they might think there's more bad people on the other street that they're moving on]. [People might hurt them.]"

Being unable to settle on an interpretation that would explain why the animals were afraid, the reader suggests a reason that has no obvious basis with any text data or with any of the interpretations already settled on. This new interpretation is a digression from other interpretations, is not held for any length of time, nor is it ever referred to again in any subsequent interpretations.

Strategy 4 - confirming an immediate prior interpretation. The fourth strategy is used when a reader makes an interpretation and confirms that interpretation immediately on the basis of subsequent information. An example of this strategy is taken from a reader's interpretation of episode A:

The interpretation had already been made that Carolina was a cat. The 'Why do you think so?' probe elicited the following confirmation: "[Because she said she never met a dog]. [I guess she doesn't like dogs] and ah, [she could go on the piano and play a tune]. [She said jump on the piano]. [And she could purr on her owner's lap]. [She could purr]. [Cats purr]."

In this example, the reader is using text information as well as background knowledge to confirm the interpretation that Carolina is a cat. Using information from the text and background knowledge the reader strengthens her interpretation. She concludes that Carolina doesn't like dogs because she (Carolina) has the freedom to go out on the balcony without fear of meeting one and she can also jump on the piano. A most significant piece of text information is that Carolina could purr on her owner's lap. The reader has integrated the data from the text and her background knowledge and is convinced that she is on the right track. Carolina is a cat and based on the reader's knowledge of cats and the information in the text, no other interpretation was thought to be necessary.

Strategy 5 - assuming a default interpretation and transforming information. This strategy is used when the reader has made a default interpretation--one that is based on insufficient, inconsistent or irrelevant information. Such default interpretations may also result from word miscues (e.g., lamps for laps, poor for purr...) or using inappropriate word meanings in context (e.g., laps as a physical exercise routine rather than a part of the body formed when seated...). The reader then attempts to confirm the default interpretation by misconstruing or transforming subsequent information to force a fit between the two. An example of the strategy is presented from a reader's interpretation of episode H:

When asked, 'Why did Carolina and Chou-Chou think that two laps are better than one?', the reader responded, "[They thought it was better exercise] or [just they wanted to run up and down stairs.] The clarifying probe 'Why do you think so?', elicited the following response: "[ 'Cause if they're running up and down that's what they like to do best], [run up and down the stairs.]"

The reader has made a default interpretation because of the contextual inappropriateness of the meaning applied to the word 'lap'. In fact, when asked what the word 'lap' meant, he replied "It's a race; if you go around the place once or twice ... once you get back get back to the starting, that's one lap." The reader attempts to confirm his interpretation using information from the episode which stated that "Carolina discovered it was fun to run up and down the stairs." The sentence information has been misconstrued to mean that if



Carolina enjoyed running up and down the stairs, then both she and Chou-Chou would think that two laps would be better exercise for them than one lap. Thus, the reader has made a default interpretation and misconstrued information to confirm it. He does not appear to consider where and how this interpretation fits with other interpretations that have been made already. In addition, the reader does not seem to be aware that 'lap' might have another meaning other than the one he applied to it, especially when the word was used elsewhere in the story.

Strategy 6 - withholding or reiterating information.

This strategy is used when a reader does not respond to questions asking for information or gives a response that repeats information already given without including any new evidence to confirm an interpretation. Characteristic of this strategy are long pauses (no response), responses such as 'I don't know', '(It's) hard to say', 'I don't know what that word means', or a response that is virtually a restatement of the question posed. For example, in response to the question "Why wouldn't Carolina and Chou-Chou want to move?", the reader said, "They wouldn't want to move." A reader's interpretation made in Episode D provides an example of this inference strategy:

Having already thought that Carolina and Chou-Chou do not want to move from their respective apartments "because they must not like to move from their old house into a new house"; the reader restated the same reason when asked the probe 'What makes you think so?': "...[they must not want to

move from their old house], [And then they might not want to move from the house they were living in.] [They might not want to move from that house to move into a new house.]"

I: this example, the reader does not give any additional information as to why the animals do not want to move. Instead, the information that Carolina and Chou-Chou might not want to move from their old homes to this new house is restated in three different ways without making the interpretation any clearer. There is no additional information but a restatement of an interpretation that has already been made--the animals do not want to move. Words are changed around and a few words added but there is no new information to clarify why the animals would not want to move from their former homes.

Strategy 7 - empathizing with the experience of others.

This strategy is used when readers project themselves into the story in order to settle on an interpretation. Motivated by a similar background experience, the reader experiences the story events with the characters and empathizes with the characters' motivations and feelings. An example of this strategy is taken from a reader's interpretation of episode G:

The reader thought that Carolina and Chou-Chou hid because fearing that something was wrong, they were afraid to come out. When asked to clarify that response, the reader said, "Well, [sometimes I get really like that] and [I try to find hiding places] [because something is going wrong]".

The reader has settled on this interpretation by placing the cats in a situation similar to one in which she has found

herself. Knowing how she feels in a similar situation where something is wrong and a particular action is taken out of fear, the reader identifies with the story situation that she feels Carolina and Chou-Chou are now in and acknowledges that those two animals will likely feel the same way. Thus, empathy between the reader and the story's characters is used to make the interpretation that the cats hid because they felt something was wrong.

Strategy 8 - depending totally on text information. This strategy is used by readers when they are unable to justify or confirm an interpretation by any other means other than quoting the text. The reader prefaces confirmation statements with references such as: It says ..., In the second paragraph, the sentence says ..., and/or verbatim restatement of the text. The first example is given from a reader's interpretation made in episode C:

The reader had already made the interpretation that the movers were taking Carolina's things to the new house. When asked 'Why do you think her things may be going there?' the response was: "Because [one day a big moving van came to Carolina's apartment.]"

To confirm her interpretation about Carolina's belongings being taken to a new house, the reader repeats verbatim the first sentence of episode C in the story.

A second example of strategy 8 is taken from a reader's interpretation of episode B:

The reader had made the interpretation that Chou-Chou is a cat. When asked 'Why do you think so?', he replied "[ 'Cause when she said right at the end

of the first paragraph 'he purred in her lap], that gave me an idea it was a cat."

The reader was dependent on the text to construct his interpretation. He indicates the specific place in a particular paragraph and summarizes the sentence that includes the information he used in making his interpretation that Chou-Chou was a cat.

Strategy 9 - depending totally on background knowledge.

Use of this strategy involves total reliance on the reader's background knowledge to justify and confirm an interpretation made about the text. An example of this strategy is taken from a reader's interpretation made in episode C:

The reader had already thought everything changed for Chou-Chou because "Maybe he's used to that small apartment and now they're going to a bigger house." When asked, 'What makes you think that?', she responded "[See, if two families come together], [then they can't all fit in this little house]. [So they'll have to move to a bigger house.]"

The interpretation had been made that because of an increase in family size Chou-Chou will move from a small apartment to a larger place. Up to this point in the story, there has not been any reference to either the size of the apartments or the new house. However, the reader has inferred that Chou-Chou's apartment may have been too small to accommodate another owner and pet, thus making the move to a bigger house necessary. The reader confirms this interpretation by relying totally on her background knowledge that because the size of the family has increased, it would not be realistic to expect another

owner and pet to live in a small apartment. This interpretation may also have been made based on the reader's own experience of living in an apartment and living in a house where there was a difference in size.

The grade three readers used nine inference strategies to make their interpretations of the "Chou-Chou and Carolina" story. Each strategy was a deliberate action taken by readers to confirm their interpretations or to solve problems that were interfering with the making of the interpretations. In many instances more than one strategy was used before an interpretation was finally settled on by the reader.

Now that the grade three strategies have been identified, a comparison between them and those inference strategies used by other readers and identified by other researchers was done. The next section compares the grade three inference strategies with those of grade six readers identified by Phillips (1988) and those of skilled adult readers identified by Collins, Brown and Larkin (1980).

#### Comparison of Grade Three, Grade Six and Adult Inference Strategies

The inference strategies used by grade three readers identified in this study have a high degree of similarity to those used by grade six readers identified by Phillips (1988). There is less similarity between the grade three inference strategies and those used by skilled adult readers identified by Collins, Brown and Larkin (1980). Table 1 provides a

Table 1

Comparison of Inference Strategies for Three Groups of Readers

	Skilled Adults (C.B. & L. '80)	Gr. 6 (P.'88)	Gr. 3 (This study)
Rebinding	1	1	-
Questioning a default interpretation	2		
Questioning a direct conflict	3	2	1
Questioning an indirect conflict	4		
Near shifting of focus	5	3	-
Distant shifting of focus	6		
Case analyzing	7	-	-
Assigning most likely case	8	-	-
Analyzing alternatives	-	4	2
Assigning an alternate case	-	5	3
Confirming an immediate prior interpretation	-	6	4
Confirming a non-immediate prior interpretation	-	7	-
Assuming a default interpretation and transforming information	-	8	5
Withholding or reiterating information	-	9	6
Empathizing with the experience of others	-	10	7
Depending totally on text information	-	-	8
Depending totally on background knowledge	-	-	9

comparison of the strategies used by skilled adult readers, grade six readers, and grade three readers. The left side of the table presents a list of all the strategies used by each of the three groups. The three columns moving toward the right side of the table identify the three groups of readers and within each column the particular strategy number for each group is assigned where appropriate. Otherwise, there is a dash (-) which indicates that the strategy named to the left was not used by that particular group of readers. The square bracket indicates that some strategies were collapsed as indicated by the strategy number to the right of the bracket.

Working from the top of Table 1, the researcher will discuss the three groups of strategies generally. It is noted that rebinding was not used by the grade three readers while it was used by the grade six and adult readers. Readers use rebinding when they substitute immediately a new interpretation upon realizing that a prior one conflicts with previous information. That is, readers, recognizing a conflict between information they already had available and an interpretation made previously, replace it immediately with a new interpretation. One could speculate that the grade three readers did not rebind because they may have needed more information before they would substitute another interpretation immediately.

Strategies 2, 3 and 4 of the Collins et al. study were collapsed to form strategy 2 of the Phillips study because the

difference between questioning a default interpretation and questioning a direct or indirect conflict were not readily discernible from each other on the basis of what the grade six readers did. This was also true of the grade threes. These two younger groups did not question a default unless a conflict was recognized between a previous interpretation and subsequent information. The strategy was used infrequently by both groups of younger readers.

Near and distant shifting of focus were also two strategies (5, 6) of the Collins et al. study that were collapsed into strategy 3 of the Phillips study. The strategies are used when readers address another question that is near or distantly related to a conflict between an interpretation and immediate information. The grade threes did not raise conflict-related questions, while those raised by the grade sixes were not easily distinguishable as being near or distantly related to the conflict. It appears that the grade threes were more likely to proceed further into the text to see if the conflict would be resolved rather than raise other questions that were related to it.

The skilled adult readers used strategy 7 in making a decision about the fit between one of a number of alternatives and available information. They used strategy 8 in determining and assigning the most likely interpretation that would fit the available data and also fit with other interpretations already made. Neither of these strategies



were used by grades three or six readers in quite the same way. Third and sixth grade readers were more likely to remain tentative until they had sufficient evidence to support one of the alternatives more than either of the others.

The most obvious difference among the three groups of readers are the total number of strategies used by each group: 8 adult, 10 grade six and 9 grade three inference strategies. The grade sixes used four strategies more than the adult readers in making their interpretations. This may indicate some hesitancy on the part of the younger group to settle on an interpretation unless information is available to support it. Therefore, they proceeded further into the text seeking that evidence. The grade three readers used two strategies that neither the adult nor the grade six readers used (strategies 8 and 9). Similar to the sixth graders, the grade three readers sought evidence to support their interpretations but it seemed they were more likely to use the text or background knowledge almost exclusively in deciding on their interpretations.

With the exception of strategy 7, Phillips' grade six strategies 4 to 10 were also used by the grade threes. The latter group did not confirm a non-immediate prior interpretation, indicating that they were not as likely to revert to an earlier interpretation and confirm it as the choice over different interpretations that had been made. A

comparison of the nine grade three and ten grade six strategies is discussed next.

Seven of the grade three strategies are very similar to the grade six strategies; namely, questioning a default interpretation and/or a direct or indirect conflict, analyzing alternatives, assigning an alternate case, confirming an immediate prior interpretation, assuming a default interpretation and transforming information, withholding or reiterating information and empathizing with the experiences of others. These strategies were used by both groups of readers as they attempted to construct complete, consistent, and plausible interpretations of narratives. The readers used information from the texts and their background knowledge to construct meaning, that is to come to an understanding of what seemed to be happening in the narratives. Two of the grade three strategies, total dependence on text information and total dependence on background knowledge, are not found within the grade six strategies. Even though "Chou-Chou and Carolina" was written from the perspective of the cats, some interpretations were strongly influenced by the children's own moving experiences; while other interpretations were text-based to the extent that the grade three readers quoted verbatim from the story to confirm them. This did not appear to be the case for the grade six readers who did not quote from the text or use their background knowledge totally in settling on their interpretations.

In the Phillips (1988) study of grade sixes and the present study, confirming a prior interpretation immediately and analyzing alternatives were the strategies used by both groups of readers more often than any of the other strategies. When readers make a good interpretation and analyze a number of alternatives, they seek evidence to support the prior interpretation and/or one of the tentative possibilities. When they find the evidence that confirms the interpretations, readers know they are on the right track. It seems logical then that they would use those strategies again and again.

In the grade six study, the rebinding and empathizing strategies were used less often than the other strategies; whereas in the grade three study questioning defaults and empathizing were used less often than any other strategies. All the grade six readers used rebinding and questioning, while confirming immediately and depending totally on text information were strategies used by all the grade three readers. Rebinding was not a strategy that the grade three readers used so it seems that they were not as likely as the grade six readers to substitute a new interpretation immediately when a prior one conflicted with previous information (rebinding). The grade threes proceeded farther into the text, and then would question a default interpretation when subsequent information conflicted with it. In other words, the grade threes questioned the default, then substituted another interpretation, whereas the grade sixes

seemed to have recognized the conflict immediately and made the substitution, thus there was no need to question the default. Empathizing may have been used infrequently by the grade three and six readers because of the sophisticated level of thinking and understanding it requires (Phillips, 1988). In order to personally identify with the motivations, feelings and situation of the characters, readers must have comprehended the text fully. For this reason, empathizing was probably used by the most proficient readers in the grades three and six groups.

There was much less similarity among the grade three inference strategies and those used by skilled adult readers identified by Collins, Brown and Larkin (1980). This is not unlikely given the knowledge and processing advantages that the adults would have had over the grade threes. Similar to the grade sixes, the grade three readers did question default interpretations when conflicts were recognized but this strategy was used rarely. The adult readers were more likely to question defaults, recognize direct and indirect conflicts much sooner likely because they are skilled readers. Grade three and six readers were more likely to suggest possible alternatives than to assign the most likely interpretation. The younger groups of readers preferred to remain tentative and to consider a number of possibilities based on available information. The younger groups of readers did not seem to realize that by assigning the most likely interpretation, they

would reduce the number of possibilities and thus settle on the most plausible interpretation sooner, as was the case with the adults in the Collins et al. study. Probably because they lack experience it seems that both groups of younger readers needed more information so that they could be more certain of an interpretation before they were willing to commit themselves to the most likely one.

Across all three reader groups, differences in the inference strategies might be expected given the stage of reading development of each group and the different texts that were used. For the grade three readers, decoding would have been less automatic than for the grade six readers whereas it would have been automatic for the adult readers. Through the stages of reading development and with practice, there is a transition in the focus of attention between decoding and comprehending, with the former becoming more automatic for skilled readers (Samuels & Kamil, 1984). Thus, as readers become more skilled, some strategies likely will be used automatically. It would not seem likely that many strategies (if any) would have become automatic for the grade three readers who are basically emergent readers.

Differences in strategies and frequencies might also be accounted for by the difference in the texts used by the readers. The skilled adult readers heard short, difficult-to-understand texts, whereas the grades three and six readers read narrative texts. This fact may also account in part for

the parallels in the strategies used by the grades three and six groups. Conversely, some of the strategies used for the interpretation of narratives may not be conducive to the comprehension of short texts that are difficult to understand.

An analysis of the three studies indicates that grade three, grade six and skilled adult readers use some similar and different strategies to understand text. The strategies will be similar to the extent that readers attempt to integrate text and background knowledge to settle on complete, consistent and plausible interpretations of the text. Additional and different strategies are used by grades three and six readers who seem to need more information before finally deciding on an interpretation, before they recognize a conflict or question an interpretation. Differences among the strategies used by each of the three groups may also be accounted for by knowledge and processing differences, the types of texts used and the fact that some of the strategies become automatic over time.

The next section presents the quantitative results and discussion showing the relationship between reading ability, frequency of strategy use, and the relationship between the strategies.

### Quantitative Results

#### Reading Proficiency and Strategy Use

These results answer the question: what is the relationship between reading ability (vocabulary and comprehension) and frequency of strategy use?

The independent variables for the quantitative analysis were vocabulary and comprehension and the dependent variables were frequencies of use of each of the nine strategies.

The mean frequency of occurrence and the standard deviation for each strategy, for reading vocabulary, and reading comprehension are presented in Table 2. Intercorrelations between each of the strategies and between each of the strategies and vocabulary and comprehension are also presented. From the table, several observations may be made: Some strategies (strategies 2, 4 and 5) are used much more often than others, some strategies (strategies 1 and 7) are used rarely, one strategy (strategy 5) correlates significantly but negatively with vocabulary and comprehension, and other strategies (strategies 3 and 1; strategies 4 and 2; strategies 5 and, 1 and 3; strategies 7 and 3, strategies 9 and 7) correlate significantly and positively with each other.

Each of the observations cited previously will be discussed separately, beginning with a discussion of those strategies (4, 2 and 5 respectively) that the grade three readers used most frequently.

Table 2

Pearson Product-Moment Correlations, Means and Standard Deviations for Frequency of

Strategy Use by Reading Vocabulary and Reading Comprehension

Variables	Vocab	Comp	S1	S2	S3	S4	S5	S6	S7	S8	S9	M	SD
Vocab	1.000											46.586	28.061
Comp	.827*	1.000										49.276	28.415
S1	-.365	-.315	1.000									1.133	1.852
S2	-.084	.130	.342	1.000								23.800	14.988
S3	-.446	-.316	.617*	.393	1.000							5.900	6.477
S4	.121	.426	.057	.630*	-.063	1.000						56.567	17.138
S5	-.602*	-.588*	.683*	.087	.713*	-.282	1.000					18.700	15.548
S6	.132	-.061	.157	-.054	-.064	-.010	-.015	1.000				7.067	4.792
S7	-.197	-.168	.523	.359	.699*	.176	.399	.018	1.000			2.000	4.043
S8	.155	.197	.035	-.160	-.031	.125	.152	.029	.097	1.000		6.000	4.307
S9	-.243	-.143	.409	.406	.434	.279	.288	-.266	.660*	.071	1.000	8.967	8.389

\*  $p < .05$  Bonferroni adjusted probabilities

The key to the Mnemonics:

Vocab = Vocabulary

Comp = Comprehension

S1 = Strategy 1

S2 = Strategy 2

S9 = Strategy 9



Discussion of Most Frequently Used Strategies

Strategy 4 (confirming immediately) was used most frequently by the grade three readers. It appears readers find it a helpful and supportive strategy when they construct meaning. In instances where readers have made a reasonably good interpretation, they tend to seek confirmation as new text information unfolds. When an initial interpretation can be confirmed and justified, then readers appear to proceed more confidently with their reading. They continue to use the strategy over and over because they are integrating effectively the new information with their interpretation.

Interpretations that are confirmed immediately by subsequent text serve to confirm for readers that they are on the right track given the context of the story. Thus, use of strategy 4 allows readers to confirm their interpretations consistently by the progressive integration of text information and background knowledge. When interpreting text it seems reasonable to assume that readers are attempting to construct a consistent and complete interpretation. If, at the outset, readers make the most complete and consistent interpretation, given the information available, then confirming that initial interpretation as additional information unfolds is a logical and reasonable thing to do.

Strategy 2 (analyzing alternatives) is also a helpful strategy for readers to use. In using this strategy, the readers are tentative; they do not settle on any one

interpretation but they consider a number of alternatives based on the information available up to that point. It seems they are tentative because the available information is insufficient for them to formulate one and only one interpretation. Therefore, until subsequent information supports one interpretation more than any of the others, the readers remain tentative and analyze several alternative interpretations.

In the course of interpreting a story, there are numerous instances in which a reader must await further detail, where a reader must be prepared to experience uncertainty because authors do not give all the information, and where the reader must weigh and balance the available information when deciding upon an interpretation. In such instances, the most strategic course of action for readers is to remain tentative and to consider plausible alternatives in light of the available information.

Strategy 5 (defaulting and transforming) was the third most frequently used strategy. In this case, readers make a default interpretation based on insufficient, inconsistent or irrelevant information. When readers go off track in an interpretation, they misconstrue or transform subsequent text information in an attempt to confirm the default interpretation (strategy 5). That is, they are more likely to alter the text to make it fit rather than question the default or remain tentative until more information is available.

There are instances where grade three readers did not appear to be aware of the inappropriateness of the meaning they had constructed in light of previous interpretations and text information. Had they been aware of the inconsistency, they may have used other strategies. In applying the physical exercise meaning instead of the body part meaning to the word "laps" for example, some children made the interpretation that two laps would be better than one for the two cats because it would make them stronger. They did not question how this interpretation fit into the overall story nor did they seem to be aware that this particular interpretation was inconsistent with other interpretations they had made and with available information. It appears that strategy 5 was used frequently because the readers tended to try to fit present information into a segment of the story rather than to integrate it into an overall story that is consistent and complete.

It is appropriate at this time to raise the issue of how the term strategy is being used in this study. The term strategy is used in a value-neutral sense. The nature of the decisions made by readers in using each strategy was examined to determine whether or not the strategy was effective given the decision to be made.

#### Discussion of Least Frequently Used Strategies

Of the nine strategies, strategy 1 (questioning defaults) was one of two strategies rarely used by the grade three readers. In order to question a default, readers must be

aware that subsequent information conflicts with the initial interpretation. Since good readers generally make the best interpretation initially, it is very likely that they will rarely have the need to use strategy 1, that is, to question their default interpretations. Poor readers, on the other hand, generally do not make the best interpretation initially but rather make default interpretations for a number of reasons. Not recognizing that a conflict exists, they attempt to confirm the default interpretation instead of questioning it. They are, therefore, more likely to use strategy 5 to misconstrue or transform information to make it fit the default interpretation. Consequently, strategy 1 (questioning defaults) was used infrequently by the readers--good readers rarely had the need to question default interpretations; poor readers were more likely to misconstrue the text information rather than question their default interpretations.

Strategy 7 (empathizing) was the other strategy rarely used by the grade three readers. Empathizing requires the capacity to experience, either vicariously or through projection of oneself, the feelings of others. Empathizing with text is a very sophisticated level of thinking and understanding; "... in order to empathize a reader must comprehend" (Phillips, 1988, p. 214). Many of the grade three readers could readily identify similarities between their experiences and some of the events described in the story, (moving, for example); however, they appear to treat the

experience of moving (their own and that of the cats) separately. The young readers did not project themselves readily into the moving experiences of the cats.

"Chou-Chou and Carolina" is a narrative about two cats who must move out of their respective apartments into a new home when their owners marry. It tells the story of the cats, not necessarily on identifying with the moving experiences of the children who read it. In other words, the story was written from the perspective of the two cats, a detail not lost on some of the children who were inclined to classify the story as a fairy tale. Strategy 7 (empathizing) was used by very few grade three readers perhaps for a variety of reasons: The perspective of the story did not lend itself to the kind of personal identification that empathizing entails; the children tended to treat the moving experiences of the cats as somewhat distinct from their own; and grade three children are in many senses emergent readers still. Hence, their reading experiences may not yet be sufficiently diverse to allow them to project into the feelings and experiences of others, since often at the emergent level they struggle to identify the words.

#### Discussion of Vocabulary, Comprehension and Strategy Correlations

Given the large number of multiple comparisons, the interdependence between some of the variables, and the small sample size, the Bonferroni  $t$  (Kirk, 1968) was used. The

Bonferroni adjusted probabilities statistic is very conservative, guards against spurious significance levels and uses a pre-established significance level of  $p < .05$ .

As shown in Table 2 there is a significant positive and high correlation (.827) between vocabulary and comprehension ( $p < .05$ ). That there is a strong, positive relationship between readers' performance on the vocabulary and comprehension subtests comes as no surprise. Similar relationships have been well documented in reading research. Vocabulary and comprehension facilitate each other to the extent that: "... (without) knowledge of word meanings, comprehension is impossible" (Devine, 1986, p. 45); "...vocabulary development enhances reading comprehension..." (McNeil, 1984, p. 112); "...the ability to comprehend and a knowledge of printed words are inseparable" (Pearson & Johnson, 1978, p. 53); and "Decoding and comprehension go hand-in-hand" (Phillips, 1989b, p. 164).

With this strong relationship in mind, one might state categorically that vocabulary knowledge facilitates comprehension and comprehension facilitates vocabulary knowledge. The more proficient the readers were in their recognition of words, their knowledge of words, word meanings and related concepts, the more effective was their comprehension of the text. By the same token, if readers were proficient in their comprehension, then they were able to use that understanding to effectively decode new words and infer

relationships within the context in which they appeared. Given the consistent and repeated evidence that vocabulary ability and comprehension are inseparable, then henceforth both shall be referred to as reading ability for the purpose of reporting the results.

When readers are proficient, their use of strategy 5 decreases. Table 2 shows negative correlations significant at  $p < .05$  level between vocabulary and strategy 5 (-.602) and between comprehension and strategy 5 (-.588). Recall that strategy 5 is the transforming and misconstruing of text information after a default interpretation has been made. If readers understand what they read, they likely will use appropriate vocabulary knowledge, infer appropriate relationships and therefore make fewer default interpretations. Conversely, when the reading ability of the readers is less proficient, they are more likely to default in their interpretations more often and attempt to confirm those defaults by transforming or misconstruing subsequent information.

#### Discussion of Strategy Intercorrelations

The discussion will now focus on the intercorrelations among the strategies. Although there were a number of these intercorrelations, a larger sample would have led to more significant correlations between strategies and between reading ability (vocabulary and comprehension) and strategies. The discussion begins with the significant positive

correlation (.617) between strategy 3 (digressing) and strategy 1 (questioning defaults). Readers use strategy 1 when, upon recognizing a conflict between a previous interpretation and subsequent text information, they question the original interpretation, abandon it, and settle on another interpretation that is more consistent with the new information. Strategy 3 is used when readers are unable to find a fit between new information and an existing, previous interpretation; nor does subsequent information provide a solution. To solve the problem, readers digress temporarily from the existing interpretation and suggest another that appears unconnected to interpretations made thus far.

The relationship between strategies 1 and 3 may be explained in terms of what readers do when a conflict arises between a previous interpretation and subsequent information. Both strategies are used to resolve a conflict that is interfering with their interpretation of the text and in each case, a new interpretation is made. The difference lies in the fact that in strategy 1, the new interpretation is often a better fit, whereas in strategy 3 it is a temporary digression which is never integrated with what has been interpreted up to that point nor with what is interpreted subsequently.

There is another very high positive correlation (.630) between strategy 4 (confirming immediately) and strategy 2 (analyzing alternatives) that is significant. As discussed



earlier, strategy 4 is used most frequently by the grade three readers to confirm an interpretation by integrating subsequent text information and background knowledge. Strategy 2 is used when readers are uncertain because the information available is insufficient to settle on only one interpretation. Instead, readers consider a number of alternative interpretations on the basis of the available information. They will remain tentative until subsequent information provides evidence that one of the alternatives being considered is in fact the best interpretation.

On the basis of these descriptions, the goal of strategies 2 and 4 is the same, that is, to construct a complete and consistent interpretation of the text. Readers do this on the basis of the information available to them. In strategy 4, readers have their initial interpretation confirmed immediately by evidence from subsequent information; in strategy 2 the evidence to support one of the alternative interpretations may be provided further along in the text. In addition to having the similar objective of constructing a complete and consistent interpretation, the fact that strategies 2 and 4 were two of the most frequently used strategies may also account for their significant relationship.

The significant positive correlations between strategy 5 (defaulting and transforming) and strategy 1 (questioning defaults) and between strategy 5 and strategy 3 (digressing)

as shown in Table 2 will be discussed separately. The correlations are .685 and .713, respectively. Strategy 5 is used when readers make a default interpretation and attempt to confirm it by transforming or misconstruing subsequent information; in strategy 1 they question a previous interpretation because they recognize a conflict between it and other information that has come into focus since that interpretation was made. Readers using strategy 5 do not seem to be aware of any conflict or inconsistency between the initial interpretation and subsequent information and will transform that information so that it confirms the initial default interpretation. The misinterpretation or transformation of information is not a deliberate attempt to mask the default with some degree of credibility but an attempt to confirm an interpretation that has not been recognized as a conflict.

Strategy 1, on the other hand, by nature of its description is a productive strategy to use because readers recognize a conflict, question the default and make the appropriate change to the initial interpretation. The fact that strategy 1 was the strategy used least often indicates a measure of its relationship to strategy 5. Had the strategy been used more often, then readers would likely have made fewer default interpretations because conflicts would likely have been recognized, questioned, and replaced by a better interpretation.

Strategy 3 (digressing) is used when readers cannot fit subsequent information within an existing or current interpretation nor can they find a solution in succeeding data, so they digress from the overall interpretation. They are sidetracked, in other words, from the overall interpretation of the text. Although readers seem to recognize a conflict, they don't question a previous interpretation as in strategy 1. Instead of transforming or misconstruing the information, they digress temporarily and offer an interpretation that may account for some of that information. It is likely that the reader's digression in strategy 3 may have been triggered by something in the text or in their background knowledge that temporarily sidetracked their ongoing interpretation. For example, it may be possible that the readers' own experiences may have superseded those described in the story or a piece of text information may have been an influencing factor leading to a temporary digression.

The relationship between strategy 1 and strategy 5 may be explained in terms of their effect on the readers' overall comprehension. Strategy 5 has a more counterproductive effect because conflicts and inconsistencies are not recognized, defaults are confirmed by transforming and misconstruing information, ultimately leading to other default interpretations. The negative effect on comprehension is less obvious with use of strategy 3 because a conflict is recognized, the previous interpretation is not changed and the

digression is temporary. The readers proceed with successive interpretations and do not refer to the digression again.

The positive correlation (.699) between strategy 7 (empathizing) and strategy 3 (digressing) was also significant. As discussed earlier, readers digress from an existing interpretation when a conflict cannot be resolved by subsequent information. The interpretation which digresses may have been precipitated by the readers' background knowledge, the text, or the integration of that background knowledge with text information. In using strategy 7, readers personally identify with the text to such a degree that they project themselves into the characters or the situation in settling on their interpretation. Central to both of these strategies is that they are primarily based on readers' experiences and how readers feel. In the case of strategy 3, the experiences described in the text and those from the readers' background may have been only marginally similar, so the readers' interpretation is a digression not a personal identification. In strategy 7, there is such a high degree of similarity between them that readers project themselves into the text to the extent that they personally identify with the characters' feelings, opinions, and motivations.

The statement above leads directly to the significant positive correlation (.660) between strategy 7 (empathizing) and strategy 9 which is used when readers are dependent upon their background knowledge to construct meaning. In order to

empathize, they must recognize such strong similarities between their own experiences and those described by the text to the extent that readers will personally identify with the characters described therein. It is not solely background knowledge about the text topic that may initiate the empathy; it is the intense similarity between some feature of text information and readers' personal experience that causes them to empathize. It is likely that this similarity activates the readers' schemata that they immediately recall a corresponding experience of their own to the extent that they can participate in and personally identify with the experiences and feelings of the characters. Thus, the correlation between strategy 7 (empathizing) and strategy 9 (dependence on background knowledge) may be explained by the fact that both are motivated highly by background experiences.

The quantitative analysis resulted in a number of findings with regard to the relationship between reading ability and strategy use. Strategies 4 and 2 were used most frequently while strategies 1 and 7 were used less often than any of the other strategies. The only strategy found to have a significant relationship with reading ability was strategy 5, the third most frequently used strategy. A number of strategies were found to correlate significantly and positively with other strategies.

Some of the grade three inference strategies, 1, 2, 4 and 7, appear to be more productive of reading comprehension than

others. How effectively and efficiently readers construct interpretations of a text may thus be facilitated by being aware of and using the strategies that promote the most consistent, complete, and plausible interpretations. Implications for instruction and the extent to which strategies facilitate or impair comprehension will be addressed in the concluding chapter.

## CHAPTER 5

## SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents a summary of the study, its findings and conclusions, implications for comprehension instruction and suggestions for further research.

## Summary

Reading comprehension involves a number of cognitive processes used to construct meaning from print. The present study focused on inferring, a process which is necessary to reading comprehension. To infer means to fill in missing information or to connect text propositions. Thus, an inference is an interpretation of a text which results from the integration of text information and background knowledge. There has been some inconsistency in inferential comprehension research with regard to young readers and inference-making: They can and do make inferences, they do not make inferences spontaneously and the quantity and quality of their inferences will vary depending on the text, the reader and the task.

The purposes of the present study were to identify the inference strategies used by grade three readers as they read a story and to determine whether or not there is a relationship between reading ability and strategy use. Thirty grade three readers in an elementary school in Central Labrador comprised the sample. Their reading ability was determined by the percentiles achieved on the Vocabulary and

Comprehension subtests of the Canadian Tests of Basic Skills (King-Shaw, 1989). A selected, basal narrative was divided into eight episodes and read orally by each reader. In individual meetings readers were directed to tell what they were thinking as they read each episode. Inferential and probe questions were asked after each episode to elicit interpretations and as much specific information as possible in the event that the reader did not report an inference or give sufficient explanation initially. The individual sessions were tape-recorded and transcribed verbatim.

The verbal reports of the grade three children provided the data for the study. They were analyzed qualitatively to identify the inference strategies that the readers had used to make their interpretations of the narrative text. Quantitative analysis was used to investigate the relationship between reading ability and strategy use. Respectively, the qualitative and quantitative analysis showed that the readers made interpretations of the story, used nine strategies to settle on their interpretations and a significant negative relationship was found between reading ability and strategy 5, defaulting and transforming.

From the data analysis, nine inference strategies were identified. These strategies reflected what the grade three readers were doing as they attempted to understand "Chou-Chou and Carolina". These strategies were similar to and different from the strategies used by grade six readers. The grade



three readers used all the strategies that the grade six readers used with the exception of rebinding, shifting of focus and confirming a non-immediate prior interpretation. Two strategies, confirming immediately and analyzing alternatives, were used more often than any other strategies by both groups of readers. Differences between the two groups of readers were found in the total number of inference strategies used, ten grade six and nine grade three strategies. Two strategies, depending primarily on text information and depending primarily on background knowledge, were used by the grade three readers but not by the grade six readers to confirm and justify their interpretations of the respective narratives.

It was found that all the grade three readers did not use the same number of strategies. That is, some strategies were used rarely and others not at all by some readers, while some strategies were used more often than others by most of the grade three readers. It was also found that some strategies were better than others for readers to use because by utilizing such strategies readers were able to settle on an interpretation that was more consistent, complete, and plausible than alternative interpretations.

#### Conclusions

Set against the context of this study as discussed, several conclusions were drawn based on the findings. The conclusions of the study are as follows:

1. Grade three readers used nine inference strategies in making their interpretations of a narrative text. Each strategy represents a specific action taken by the readers in attempting to comprehend the story.
2. Confirming immediately and analyzing alternatives (strategies 4 and 2) were used more often, while questioning defaults and empathizing (strategies 1 and 7) were rarely used by readers. By definition, use of each of these four strategies resulted in a more complete and consistent interpretation of the text than the use of some of the other strategies.
3. Because of its significant negative relationship with reading ability, proficient readers were less likely to use strategy 5 (defaulting and transforming) to interpret the story. Hence, they made more complete and consistent interpretations of the narrative because they used more of the available relevant and consistent information. Because they used information more effectively, proficient readers were also less likely to repeat interpretations, be unresponsive or digress (strategies 6 and 3) than less proficient readers.
4. Among the grade three readers differences were found in the extent and nature of the strategies used. The pattern of strategy use was established

by the readers' attempts to construct meaning regardless of their degree of success in constructing complete and consistent interpretations.

5. There is some evidence that young, primary readers may process text differently than older, more mature readers. They appear to proceed farther into a text before they settle on an interpretation; unlike older readers who will assign the most likely interpretation sooner.

#### Implications for Instruction

The findings and conclusions of the study have implications for comprehension instruction, particularly in the primary grades. The following implications are drawn from the preceding conclusions.

1. Teachers need to be aware that young readers integrate text information and background knowledge to construct meaning of narrative texts and use strategies to make their interpretations. Teachers need to be aware of what these inference strategies are and the circumstances in which they are used in order to incorporate them into their teaching.
2. Comprehension instruction can focus on creating awareness and use of the strategies that facilitate understanding by encouraging the search for and use of information that strengthens and verifies

interpretations (strategy 4). When readers are uncertain, use of tentativeness (strategy 2) can be encouraged which would help readers decide on an interpretation with greater certainty when subsequent information confirmed one possibility more than others. Comprehension instruction can also focus on raising questions about inconsistencies and conflicts between previous interpretations and subsequent text information, thus readers would be more likely to change default interpretations in accordance with the new information (strategy 1). Because the ability to empathize requires a deep level of understanding, it may be possible that increased use of the productive strategies (4, 2, and 1) may increase the likelihood of interpretations based on empathy (strategy 7) in texts where empathizing is appropriate.

3. Instruction that focuses on awareness and use of the productive strategies would likely reduce readers' use of the counterproductive strategies. Encouraging readers to be tentative would discourage use of inconsistent and insufficient information in settling prematurely on interpretations. Discussing, demonstrating and evaluating connections between previous and

subsequent interpretations and information would help readers, especially less proficient readers, to remain on track instead of defaulting, repeating or digressing (strategies 5, 6 and 3). Instruction that emphasizes the importance of the readers' background knowledge would foster self-confidence in less proficient readers, particularly when they infer meaning from text using their background knowledge.

4. All readers should be instructed in the use of those strategies that facilitate complete, consistent, and plausible interpretations of a text. Readers may find some strategies more effective than others, depending upon the type of text being read. It is important that readers learn not only the strategies but also how and when to use them.
5. The inferential comprehension of young readers would be facilitated through instruction where readers learn what inferences are, why they are helpful and necessary in understanding what is read and how they are made. Such instruction may help readers to integrate text information and background knowledge and make good interpretations sooner.

### Recommendations for Further Research

Some recommendations are made for further research of the inferential comprehension of young readers. The present study can be replicated with a larger sample of grade threes reading a different narrative in order to confirm the findings. Using a larger sample may also determine significant relationships between reading ability and the other inference strategies in addition to its significant correlation with strategy 5 as found herein. Would a larger group of grade three readers, who are less transient than the present sample, be less influenced by their own moving experiences in settling on their interpretations of this story?

Having identified the inference strategies used by grade three readers to comprehend narrative text, the study may be replicated using descriptive and expository texts to ascertain whether grade three readers would use similar or different strategies to comprehend these types of text and determine how frequently similar strategies would be used. Similar strategies may or may not be used as frequently on different text types. In addition, replicating the study with different grade levels and proficiency levels using narrative, descriptive, and/or expository texts would offer greater understanding of the inferential processing of young, primary readers.

The research reported here utilized a combined methodology of verbal reports and questions to identify the inference strategies used to interpret narrative text. Another method that may offer further information for assessing readers' ability to make inferences is unaided retelling. Primary readers' unaided retellings of short texts may reveal their ability to organize, evaluate and integrate text information and their background knowledge. It is very likely that the content and structure of these retellings would be influenced by the readers' own interpretations of the text.

This study contributed to our understanding and knowledge about the reading comprehension of young children. It found that young grade three readers make many inferences when they read. Some of these interpretations are good, others are inconsistent with available information. The grade three readers used inference strategies in attempting to settle on their interpretations--some of which are productive, others are counterproductive to reading comprehension. Research with young readers can be extended to investigate instructional activities and techniques that would encourage the use of the more productive strategies and thereby facilitate the making of consistent and plausible interpretations of written text.

It is through continued research that greater understanding of children's inferential comprehension is achieved, that the chances for improvement in comprehension

instruction and reading programs are enhanced and that the overall benefits to all readers are realized.



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## Appendices



**APPENDIX A**

P.O. Box 391  
Station C  
Goose Bay, Labrador  
September 18, 1989

Mr. G.F. Butler  
Assistant Superintendent  
Roman Catholic School Board  
for Labrador  
Mail Bag 3019, Station B  
Happy Valley/Goose Bay, Labrador  
AOP 1B0

Dear Mr. Butler;

In order to fulfill the final requirements for the degree of Master of Education in Curriculum and Instruction from Memorial University of Newfoundland, I am presently involved with researching and drafting a thesis on inferences in reading comprehension.

The thrust of the thesis is to investigate the reading performance of grade threes to determine whether or not they make inferences when they read, to identify the inference strategies they use as they attempt to understand text and to determine whether or not these inference strategies differ according to reading proficiency.

The data will be collected on a one to one basis in the following manner. As each child reads a story, s/he will be asked to verbalize what s/he is thinking while reading. Probe questions will be used to elicit and clarify responses. Each session will be tape-recorded and each "think-aloud" protocol will be transcribed verbatim for data analysis.

To prepare for and carry out this investigation, I anticipate that the children will use approximately three hours of class time.

I also intend to write the children's parents to ask permission for their child's participation in this project and to inform them of the purpose and procedure of the investigation.

I respectfully request the permission of the Roman Catholic School Board for Labrador to carry out this research using the grade three classes of St. Michael's School in Goose Bay.

Yours truly,

Sheila A. Yetman

**APPENDIX B**



## St. Michael's School

P.O. BOX 370, STN. "A"  
GOOSE BAY, LABRADOR AOP 1S0  
TELEPHONE: 709 896-2214 OR 709 896-2221

Principal -  
Douglas Abbass  
Asst. Principal -  
Noreen Brazil

May 1, 1990

Dear Parents:

I am presently working toward a Masters of Education degree in Curriculum and Instruction from Memorial University of Newfoundland. The final requirement on my program is researching and writing a thesis on reading comprehension.

In order to complete this thesis I must collect and analyze data on how young children infer meaning from what they read. With the approval of my principal, Mr. Doug Abbass, and subject to your approval as parents, I have received permission from the Roman Catholic School Board for Labrador to involve the Grade 3 students of St. Michael's School in my research.

Each child will meet with me on an individual basis for approximately 30 minutes. At this session, each child will read a story, discuss the story with me and answer some questions about it. Should a child choose not to participate, his/her decision will be respected.

Should you need any further information or have any questions regarding this research or its procedure, please contact me by telephone or in person here at St. Michael's School.

Thank you for your support and cooperation.

Sincerely yours,

\_\_\_\_\_  
S. Yetman

\_\_\_\_\_  
I give my consent to my child's participation in this research.

\_\_\_\_\_  
I do not give my consent to my child's participation in this research.

\_\_\_\_\_  
Parent's Signature

\_\_\_\_\_  
Child's Name

## APPENDIX C

# Chou-Chou and Carolina

*by Christine McClymont*

A

Carolina liked the place where she lived. She liked it a lot. Her food dish was in the kitchen. Her litter box was close by. She could sleep in the living room on the orange sofa, the green chair, or the yellow rug.

Carolina could go out on the balcony for fresh air and never meet a dog. She could jump up on the piano and play a tune. Best of all, after supper, she could purr on her owner's lap.

Good morning (afternoon), \_\_\_\_\_  
(Very brief conversation to put the child at ease and respond to any queries he/she might have).

I would like you to read this story about Chou-Chou and Carolina out loud for me. I'll ask you to stop every now and then so you can tell me what you are thinking - what thoughts/ideas come to your mind as you read along.

A. 1. What do you think Carolina is? (Why do you think so?)

A. 2. Was Carolina happy? (How do you know?)

A. 3. Do you think Carolina was loved? (How do you know?)

B

Chou-Chou liked the place where he lived, too. He had his own food dish and his own litter box. He had a blue sofa, a purple chair, and a red rug to sleep on. From the window ledge, he could see the whole city. But best of all, he had an owner with a nice warm lap to purr on.

Then everything changed. Carolina's owner met Chou-Chou's owner. They fell in love and got married. They bought a house together.

B. 4. What do you think Chou-Chou is? (Why do you think so?)

B. 5. What do you think will happen to Carolina and Chou-Chou now? (What makes you think that might happen?)

c

One day, a big moving van came to Carolina's apartment. Carolina couldn't believe it. The movers took her food dish, her litter box, the orange sofa, the green chair, the yellow rug, and everything else. They put it all in the big van.

Then the worst thing happened. Carolina's owner put her in a cage and closed the door. She put the cage into the back seat of her car.

C. 6. Where do you think the movers are taking Caroline's things? (Why do you think so?)

C. 7. How is Carolina feeling? (Why do you think so?)

C. 8. Where do you think Carolina may be going? (Why do you think she may be going there?)



D

Everything changed for Chou-Chou. The big moving van came to his apartment next. The movers put his litter box, his dish, the blue sofa, the purple chair, the red rug, and everything else into the van. Then Chou-Chou's owner put Chou-Chou into a cage. He put the cage into the back seat of his car.

Meow! Howl! Whimper! Growl! Carolina and Chou-Chou yelled all the way to the new house.

D. 9. Why did Chou-Chou think everything changed for him? (What makes you think so?)

D.10. How do Carolina and Chou-Chou feel about what is happening to them? (Why do you think so?)

D.11. Do you think Carolina and Chou-Chou might be afraid? (What makes you think so?)

D.12. Why wouldn't Carolina and Chou-Chou want to move? (What makes you think so?)

E

The movers carried the boxes and furniture into the new house. Last of all, Chou-Chou's and Carolina's owners brought in the two cages and put them on the floor.

The two owners looked at the cages nervously. Then, they looked at each other.

"Now?" said the man.

"Now," said the woman.

At the same moment, they opened both cage doors.

E.13. Why do you think the two owners are nervous?

E.14. What do you think will happen now that the cage doors are open? (Why do you think so?)

F

The first ~~one~~ to slink out was Carolina. Belly to the floor, she explored the living room. The purple chair and the red rug smelled funny.

Slowly, Chou-Chou came out, too. He sniffed the piano legs. He rubbed against the orange sofa. He scratched the strange yellow rug.

Suddenly, he was nose to nose with something really strange!

F.15. Why do you think Carolina and Chou-Chou were afraid to come out? (What makes you think so?)

F.16. Why did the purple chair and the red rug smell funny?

F.17. What do you think Chou-Chou is nose to nose<sub>1</sub> with? (Why do you think so?)

G

Carolina hissed. Chou-Chou growled. They knew that their lives were ruined!

Carolina ran and hid under the orange sofa. Chou-Chou raced to the basement. They hid for hours and hours. Their owners didn't know what to do.

G.18. Why did Carolina and Chou-Chou hide?  
(What makes you think so?)

G.19. Why didn't the owners know what to do?

H

By nightfall, all was well. Chou-Chou found a lovely meal of salmon in his old dish.

Carolina discovered that it was fun to run up and down stairs.

And best of all, they both decided that two laps are better than one!

H.20. Why did Carolina and Chou-Chou think two laps are better than one?

H.21. Would living together be better for the two pussy cats? (Why do you think so?)

Other possible clarification questions:

Why did you change your mind?

What do you mean by \_\_\_\_? \_\_\_\_?

## APPENDIX D

Each practice passage was copied on overhead transparencies and presented with print and pictures concealed to each grade three class, one passage at a time. Sections of each passage were revealed in a 2 to 3 step process after the class had been given the directions. (Arrows indicate sections of passages as they were revealed to the readers.)

#### Directions

There is a short passage under this cover that you will see one section at a time. As each part is uncovered, I want you to read it and tell me what you are thinking - whatever ideas come to your mind as you read each part.

## Passage 1

On the side  
of a hill,  
in a deep, dark cave....



Who lives here?  
Why do you think so?

## Passage 3

In our neighbourhood,  
these people are important.  
They are always ready to help  
us in emergencies.



One day, I saw them put out a  
fire.

In our neighbourhood, we  
know lots of important people.

Who are these people?  
What makes you think so?

## Passage 2

Under a rock  
by a pond,  
in a deep, dark hole...



Who lives here?  
Why do you think so?

## Clarification Questions

1. Why did you change your mind?
2. Why is it possible a \_\_\_ lives here?
3. What do you mean by \_\_\_?



## APPENDIX E

CASE 07-2-3

Verbal Report

[ ] = Idea Units  
 / / = Inference Strategy  
 ( ) = Maze or Repetition

S = Student  
 T = Teacher  
 N = Child's name

- T: Mmmmm. Okay -N-. Now I'm going to ask you to read a story out loud for me. The story is right here. It's called "Chou-Chou and Carolina." As you read the story out loud, I'm going to stop you every now and again so you can tell me what you're thinking. You know, what kinds of ideas or thoughts about the story come into your mind as you read along. Any questions?
- S: No. I don't think so.
- T: You understand the directions?
- S: I think so.
- T: You think so? Very good. Well then, shall we begin, -N-?
- S: I suppose.
- T: Okay.

[Chou-Chou and Carolina]

A

---

- S: Carolina liked the place where she lived. She liked it a lot. Her food dish was in the kitchen. Her litter box was close by. She could sleep in the living room on the orange sofa, the green chair, or the yellow rug.

Carolina could go out on the balcony for fresh air and never meet a dog. She could jump up on the piano and play a tune. Best of all, after supper, she could purr on her owner's lap.

- A1 T: What do you think Carolina is, -N-?
- S: [A cat] /04/

T: Why do you think so?

S: [Because it says when she goes on the balcony that she'd never meet a dog.] /8/ [And usually cats are the ones that are afraid of dogs,] /04/ /09/ [so that's why, I suppose, she's a cat.] /04/

A2 T: Was Carolina happy?

S: [Yes.] /04/

T: How do you know?

S: [Because it said that she liked where she lived.] /04/ /08/

T: Uh-uh.

S: [And because of all the things she has] /04/ [and all the nice things that she gets to do.] /04/

A3 T: Do you think Carolina was loved?

S: [Yes.] /04/ [I think she was loved a lot.] /04/

T: How do you know? How do --- Why do you feel she was loved a lot?

S: [Cause all the things she gets to do.] /06/ [Some things (like) other animals might not be allowed to do that] /09/ [because of their owner] /09/ [but (I think this---) I think that Carolina was very lucky] /04/ [that she gets to do this] /04/ [so I think she's loved a lot] /06/

T: Mmmnn mmmnn. Anything else?

T: Okay.

B  
---

S: (Pause)

T: Chou-Chou

S: Chou-Chou liked the place where he lived, too. He had his own food dish and his own litter box. He had a blue sofa, a purple chair, and a red rug to sleep on. From the window ledge, he could see the whole city. But best of all, he had an owner with a nice warm lap to purr on.

Then ever--- Then everything changed. Carolina's owner met Chou-Chou's owner. They fell in love and they got married. They bought a house together.

B4 T: What do you think Chou-Chou is?

S: (Slight pause) [A dog.] /05/

T: Why do you think so?

S: [I'm not sure of it.] /01/ [It's hard to say.] /06/ [But I still--- I think it's a dog] /02/ /05/ [but I'm not really sure why.] /02/

T: Mmmnn mmmnn. You can't think of anything?

S: No.

T: Okay.

S: I don't a---

T: Why do---- Sorry.

S: [I don't know a reason] /06/ [why it might be a dog] /05/ [but I still think it is.] /02/ /05/

B4 T: Okay. What do you think will happen to Carolina and Chou-Chou now?

S: (Mmmm) [might have to get to know each other maybe] /02/ [get into fights maybe] /02/

T: What makes you think that might happen?

S: [Because if they might be cat and dogs] /01/ /02/ [Usually cat and dogs who don't know each other too well,] /09/ [they sometimes fight.] /04/

T: Uh-uh.

C  
---

S: One day, a big moving van came to Carolina's apartment. Carolina couldn't believe it. The movers took her good dish, her litter box, and the orange sofa, the green chair, and the yellow rug, and everything else. They put it all in the big van.

Then the worst thing happened. Carolina's owner put her in a cage and closed the door. She put the cage into the back seat of her car.

C6 T: Where do you think the movers are taking Carolina's things?

S: [To the new house] /04/ [that they're going to.] /04/

T: Why do you think so?

S: [Because it says that the two owners were getting married] /08/ [so I think they might be moving (to the---- to the other house] /02/ /04/ [that they're going to share between them] /04/ [because in earlier they said they were going to move into another house] /04/ /08/ [so I think that since all the things are being moved,] /02/ /04/ [I think that's where they're going.] /02/ /04/

C7 T: Mmmm. How is Carolina feeling?

S: [Kind of surprised.] /04/

T: Why do you think so?

S: [Because she might not know what it's like to go places] /04/ /07/ [with all of her things being taken away] /04/ /07/ [before she knew anything about it.] /07/ [So she might feel a little surprised] /02/ /04/

C8 T: Oh. Whe--- Where do you think Carolina may be going?

S: (I don't know.) [Maybe to the big house with her owner] /02/ (but----)

- T: Mmnn mmnn.
- S: [I don't know.] /06/
- T: Why do you think she may be going to the big house with her owner?
- S: (Well) [because she's either going there with her owner] /02/ [or she's going to be sold.] /03/ [I think the best thing to happen is to stay with her owner.] /02/ /04/
- T: Mmm mmnn.
- S: That's for---
- T: Why do you think that would be best?
- S: [Because her owner loves her] /04/ (and---) [and she might not want to give Carolina away] /02/ [so I think she might keep her.] /02/ /04/
- T: Mmmnn mmnn.
- S: So where do you think Carolina may be going then?
- T: (To the---) [To the other house.] /04/

D  
---

- S: Everything changed for Chou-Chou. The big moving van came to his apartment next. The movers put--- put his litter box, his dish, and the blue sofa, and the purple chair, the red rug, and everything else into the van. Then Chou-Chou's owner put Chou-Chou in a cage. He put the cage in the back seat of his car.

Meow! Howl! Whimper! Growl! Carolina and Chou-Chou yelled all the way to the new house.

- D9 T: Why did Chou-Chou think everything changed for him?
- S: [Because it might be the same with him and Carolina] /02/ /04/ ['cause they might not know what's going to happen next] /02/ /04/ [so they might be a bit (ah--- bit) surprised] /02/ /04/ (and things.)

- T: What makes you think so?
- C: (Well.) [It's kind of hard to say.] /06/
- T: Do you have any ideas or thoughts about it?
- S: [I'm not sure.] /02/
- D10 T: How do Carolina and Chou-Chou feel about what is happening to them?
- S: (Pause)
- T: How do they feel about what's going on?
- S: [Maybe a bit surprised] /02/ /04/ [and worried] /02/ /04/ [because they might not know what's happening] /02/ [so (they might not be prepared so they--- so they don't have--- so) they can't do anything] /04/ [because they don't know what's going to happen next.] /04/
- D11 T: Mmmn mmmn. Okay. Do you think Carolina and Chou-Chou might be afraid?
- S: [Maybe.] /02/
- T: Why do you think so?
- S: Be---
- T: That that is possible?
- S: [Maybe none of this kind of stuff ever happened to them] /02/ /04/ (to them) [so they might not be ready for the next thing that might happen.] /02/ /04/
- T: Mmm.
- S: [So it seems like they're not prepared for anything.] /02/ /04/
- T: Pardon?
- S: [He might not be prepared for anything] /04/ /02/ [that might happen next.] /02/ /04/

- D12 T: Mmmnn mmmnn. Why wouldn't Carolina and Chou-Chou want to move?
- S: ['Cause they were used to the old houses] /04/ [that they were living in] /04/ [and (they might not ah, be use--) they might not be ready for their new house yet.] /02/ /04/
- T: What makes you think so, -N-?
- S: (Pause)
- T: What makes you think that they might not be ready for the new house yet?
- S: ['Cause (mmmm), they lived in their old houses so long] /04/ [that (they might not do--- like) they might be too used to living in the house that they are in] /06/ [that they might think no they can't go there] /02/ /04/ [because they'd miss their other house.] /04/
- T: Mmmnn mmmnn. Yeah. Very good. You're really getting a lot out of this story, aren't you?
- S: Mmmnn mmmnn.
- T: Okay.

E  
---

- S: The movers carried bo--- carried boxes the fur --- and the furniture into the new house. Last of all, Chou-Chou's and Carolina's owners brought in the two cages and put them on the floor.

The two owners looked at each the cages nervously. They looked at each other.

"Now?" said the man.

"Now?" said the woman.

At the same moment, they opened both--- At the same moment, they both opened the cage doors.



- E13 T: Why do you think the two owners are nervous?
- S: ['Cause they might think that (mmm), Chou-Chou and Carolina are going to get into a fight maybe.] /02/ /04/
- T: What makes you think that would make the owners nervous?
- S: [Because they might not know what to do with them] /02/ /04/ [after they get into a fight] /04/ [and then they (don't---) might not know how to separate them] /02/ /04/ (or anything.)
- E14 T: Mmmmm. What do you think will happen now that the cage doors are open?
- S: [They might just walk out] /02/ /04/ [and try to find their way through to other places in the house.] /02/ /04/ [Or they might get into a fight.] /02/ /04/
- T: Ah. Why do you think they might ji--- might just walk out and find their way to other places?
- S: [They might be tired from all that moving] /02/ /04/ (and everything.)
- T: Mmmmm.
- S: [That happens to me] /04/ /07/ [when I'm on vacation] /04/ /07/ [and I get home, I just go to sleep.] /04/ /07/
- T: Uh-uh. So you think Carolina and Chou-Chou might feel the same?
- S: [Maybe.] /02/
- T: Mmmmm. And you also said that or they might come out and get into a fight. What--- What makes you think that might happen?
- S: (Well,) [sometimes cats and dogs get into fights] /04/ /09/ [when they first meet.] /04/ /09/
- T: Uh-uh.
- S: ['Cause I remember my next door neighbors had a cat and a dog] /04/ /09/ [and when they first met,] /04/ /09/ [they kept climbing on top of each other]

/04/ /09/ [and scratching] /04/ /09/ and biting.]  
/04/ /09/

T: Uh-uh. Mmmmm. Very good. Okay, -N-.

F  
---

S: The first one to slink out was Carolina. Belly to the floor, she explored the living room. The purple chair and the red ru---red rug smelled funny.

Slowly, Chou-Chou came out, too. He sniffed the piano legs. He rubbed against the orange sofa. He scratched the yellow rug. He scratched the strange yellow rug.

Suddenly, he was nose to nose with something really strange!

F15 T: Why do you think Carolina and Chou-Chou were afraid to come out?

S: [Because they might not know (what---) what's there] /02/ /04/ [so they might not be ready for any surprises] /02/ /03/ [that might be there in the new house.] /03/

T: Mmmnn mmmnn.

S: [Maybe anything left over] /02/ /03/ [that anyone else might have left] /02/ /03/ [when they last live there.] /03/

T: Why--- What makes you think so?

S: [Because they haven't been there before maybe] /02/ /04/ [and they might not know if they're up to it.] /02/ [They might not know that (mmmm,) there might be something there] /02/ [that might maybe surprise them] /02/ /03/ [or scare them.] /02/ /03/

F16 T: Mmmn mmnn. Why did the purple chair and the red rug smell funny?

S: [Where they were in someone else's house.] /04/ [And she didn't know much about it.] /04/

T: How do you mean she didn't know much about it?

S: (Well,) [she didn't know much about it] /06/  
[because it was in someone else's house] /06/ [and  
I don't think she went to that house very often]  
/02/ /04/ [or maybe not at all.] /02/ /04/

T: Mmmnn. Who's the she?

S: [Carolina.] /04/

F17 T: I see. What do you think Chou-Chou is nose to nose  
with?

S: [Maybe nose to nose with Carolina.] /02/ /04/

T: Why do you think so?

S: (I don't know.) [Maybe just (mmm,) a good guess.]  
/02/

T: Pardon?

S: Maybe just a guess. I'm not sure but maybe.

T: Anything else?

S: I don't think so.

T: Okay. That's fine.

G  
---

S: Carolina hissed. Chou-Chou growled and they  
knew that their lives were ruined!

Carolina ran and hid under the orange sofa.  
Chou-Chou ran to the basement. They hid for hours  
and hours. Their owners didn't kn--- know what to  
do.

G18 T: Why did Carolina and Chou-Chou hide?

S: [Because they mightn't have know each other] /02/  
/04/ [so they might have been afraid] /02/ /04/  
[what each other might be.] /04/

- T: What makes you think so?
- S: [Because they mightn't have seen them before.] /02/  
/04/ [Because it said in the beginning that when  
Carolina was on the balcony] /08/ [that (mmm,)  
when she was on the balcony] /06/ [that she didn't  
see any dogs---] /05/
- T: Mmmnn mnnn.
- S: (--- or anything) [So she mightn't know what a dog  
looked like] /02/ /04/ [so she mightn't know what  
(mmm, Ch--- what ah.) Chou-Chou was] /02/ /04/ [so  
she hid] /04/ ('cause sh---) ['cause he might have  
scared her.] /02/ /04/
- T: Mmmnn mnnnn. Why didn't the owners know what to  
do?
- S: [Because they (didn't--- they weren't expecting---  
they mighten have ex---) mightn't have been  
expecting anything like this to happen.] /02/ /04/
- T: Mmmnn mnnnn. Okay, -N-.

H  
---

- S: By nightfall, all was well. Chou-Chou found a  
lovely meal of--- (pause)
- T: Okay you can make a guess.
- T: Just go on then.
- S: --- salmon?
- T: Mmmnn mnnnn.
- S: --- in his old dish.

Carolina discovered that it was fun to run up  
and down the stairs.

And best of all, they both decided that two  
laps are better than one!

- H20 T: Why did Carolina and Chou-Chou think two laps are  
better than one?

- S: [Because they were only used to having one lap to curl up on] /04/ [so they might think] /02/ [that having two would be twice as fun.] /04/
- T: Mmmmm mmnnn. Do you still think that Carolina and Chou-Chou are cat and dog? Which one is the cat?
- S: [Carolina.] /04/
- T: And which one is the dog, do you think?
- S: [Chou-Chou.] /05/
- H21 T: Mmmnnn. Would living together be better for the two pussy cats?
- S: (Mmm,) [maybe.] /02/
- T: Why do you think so?
- S: (Well) [because they might get to know each other a little more] /02/ /04/ [and so they might think that (having some---) having a playmate to play with] /02/ /04/ [might be a little more interesting.] /02/ /04/
- T: Anything else you'd like to say about the story?
- S: I don't think so.
- T: Okay, -N-. Thank you so much. You've been very helpful this morning.
- S: Mmmnn mmnn. I enjoyed it a lot.









